Rocky Flats Environmental Technology Site

1995 Year End Dam Inspection and Monitoring Report

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Rocky Mountain Remediation Services, L. L. C.

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1. PURPOSE

Visual inspections were conducted in the spring and fall/winter of 1995 of the 12 earthen dams located at the Rocky Flats Environmental Technology Site (RFETS) by Rocky Flats Operating Contractor (RFOC) dam inspection personnel, currently under Rocky Mountain Remediation Services, L.L.C. (RMRS). The purpose of these inspections was to identify apparent deficiencies associated with the dams that may have occurred throughout the year, to evaluate the completion of recommended work since previous inspections, and to re-visit previous recommendations of various entities.

Monitoring activities are performed routinely for instrumentation located at the dam, and for seepage/wet areas and displacements (cracks, sloughs). Monitoring is conducted to aid in determining a dams condition by physically measuring changes which may occur at the dam.

This report summarizes the 1995 inspection and monitoring findings and results, as well as the condition and overall performance of each dam.

2. BACKGROUND

Intermediate inspections of Dams A-1, A-2, A-3, A-4, B-1, B-2, B-3, B-4, B-5, C-1, C-2, and the Sanitary Landfill Dam were performed in May and June, and in October, November, and December of 1995. Monitoring activities were performed on a continual basis throughout the year, and are discussed for each dam below.

The dam inspection and monitoring activities generally followed the outline of the draft Pond and Dam Monitoring and Inspection Guidance, Procedure A-Q64-DIP-001 (DIP). The Emergency Response Plan for Failure of Dams A-4, B-5, and C-2, Procedure 1-A25-5500-06.08, (ERP), also governs actions performed at the referenced dams based on pond and piezometer elevations, seepage, displacements, and other potential dam failure mechanisms.

Recommendations include those from this years inspections, as well as those from previous inspections or evaluations that are currently applicable, and list the identifying entity (Office of the State Engineer (SE), Federal Energy Regulatory Commission (FERC), United States Army Corps of Engineers (USACE), Woodward-Clyde Consultants (WC), RFOC).

3. DISCUSSION

The following is a summary of observations listed in the field, monitoring results and evaluations for various activities/instrumentation associated with the dam, and a listing of required and recommended actions that have been identified at each dam.

Each dam is rated as "good", "questionable", or "poor" in condition. To be rated as "good", a dam must have no required actions other than monitoring activities, and the monitoring activities need to indicate no concerns associated with them. A dam rated "questionable" indicates that full inspection or monitoring of all necessary items could not be completed, that a deficiency exists that may affect the safety of the dam, or that inspections or monitoring activities are inconclusive about a certain condition. A dam in "poor" condition is one that inspection or monitoring activities indicate a condition that will, or will likely, result in the failure or improper functioning of the dam. Items listed under "Priority Actions" need to be satisfactorily completed for a dam to be listed in "good" condition. A dam listed in "poor" condition requires satisfactory completion of "High Priority Actions" in order for the condition to be upgraded.

3.1 Summary of Overall Dam Status

In general, all of the dams need vegetation control to be routinely performed on the upstream and downstream faces and around the outlet works. This includes removal of vegetation around outlets and from upstream slopes, and yearly mowing of downstream faces. The fall/winter inspections were greatly hindered by high and excessive vegetative growth, which in many cases prohibited adequate inspection. There are rodent holes in most of the dams, but they are generally small and not considered a significant concern except where otherwise noted. These also need to be routinely filled and controlled. Most dams are also in need of crest regrading due to tire ruts and/or

ponding areas on the crests. The largest concern is the extensive erosion caused by spillway flows at A-3 and C-1 during the heavy precipitation in May.

Many of the reservoirs (ponds) were filled to record high water levels this spring during the period of extended precipitation from April through early June. Piezometer elevations in many cases exceeded previous highs and established safety limits. Some of the high piezometer readings, particularly in toe piezometers, are believed to be greatly influenced by ground water in the area. Crest monument and inclinometer monitoring were performed approximately monthly at Dams A-4, B-5, and C-2 for a year after installation to gather data in order to determine tolerances, accuracy's, etc., and are discussed for each dam below. Monitoring is now being performed quarterly (in approximately March, June, September, and December) for these items.

Deficiencies other than "High Priority Actions" generally do not require immediate action, but do require attention in a timely manner. "High Priority Actions" are items that require immediate action in order to assure the safety and proper functioning of the dam. Items listed under "Priority Actions" are those items that are considered a potential threat to the integrity of the dam or to the proper functioning of the dam, as well as any monitoring activities that need to be performed. "Priority Actions" may also be those that need to be performed to allow proper inspection of the dam such that an adequate determination of the dam's condition can be made. "Other Recommended Actions" are those items that should be addressed, but do not pose a imminent threat to the dam at this time. "Other Recommended Actions" are generally maintenance actions to prevent excessive deterioration of the dams. In some cases, these items are currently a recommendation, but if left undone may develop into dam safety issues and become a required action. At that point, it is likely the required action would be more extensive. Prompt maintenance activity will prevent major reconstructive work or more costly repairs in the future. Placement of actions into the categories is based on the judgment of RFETS dam inspection personnel. Actions are listed in order of priority, as determined by dam inspection personnel.

Photographs for new items of concern in 1995 are located in Appendix A. Dam inspection checklists from 1995 inspections are located in Appendix B. Field sheets from displacement and seepage monitoring activities are located in Appendix C. Pond and Piezometer elevation graphs are located in Appendix D. Movement monument monitoring results are located in Appendix E and inclinometer monitoring results in Appendix F.

3.2 Dam A-1

3.2.1 Dam Condition

The overall condition of this dam is questionable.

3.2.2 Field Observations

6/5/95 Inspection, Water Elevation 5826.2', 36% on 6/8/95

The seepage from the dam at the downstream toe could not be assessed due to excessive vegetative growth in the area. Additionally, leakage through the outlet conduit was a small trickle in the previous inspection, but had increased significantly to about one half cubic foot per second during this inspection. Inspection of the entire length of the pipe and the intake could not be performed to determine the cause. The outlet works are inoperable due to what is believed to be a grout plug on the upstream end of the pipe. Inspection of the intake cannot be performed due to heavy sediment cover in the area. The leakage was clear at the time of inspection, however, a considerable amount of soil/sediment had been deposited on the flared end section indicating removal of sediment or soil from the pond bottom. Since this pipe was installed at the same general time as that of Dam B-1, it may be in the same general condition as Dam B-1's, which was found during the construction project at the dam to be in poor condition, with holes rusted through the bottom. Some corrosion and rust is apparent at the downstream end of the pipe.

Other items of lesser concern were noted during inspection. Debris was found on the crest and upstream slope. Minor rodent holes were observed on the downstream slope and abutment contacts. The spillway channel had some generally minor erosion caused by the May storm along its northern bank and at the downstream end away from the dam. There are small trees in the spillway that cause some blockage of spillway flow. A large slough on

the hillside above the spillway was noted. Riprap protection of the outlet stilling basin is sparse and the flared end section is damaged, however, as noted above, the outlet is apparently inoperable except for the leakage. Grass covering on the abutments is sparse.

12/7/95 Inspection, Water Elevation 5824.3, 7.1% on 12/7/95

All previous findings were still found to be current. The only new finding was high grass on the downstream slope which made inspection difficult. The leakage from the outlet conduit was minor at the time of this inspection due to the low elevation of the reservoir.

3.2.3 Actions Performed in 1995

No corrective actions have been performed at this dam in 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.2.4 Monitoring Activities

Monitoring activities at the dam, with the exception of pond elevation monitoring, are currently performed during spring and fall dam inspections. Pond elevation gage rods are the only monitoring instrumentation present at the dam.

3.2.4.1 Pond Elevation

Water elevations at A-1 are monitored weekly, and more frequently if heavy inflow is occurring. Pond A-1 ranged between elevation 5823.5' (1.8%) and 5829.1' (100%), and was at an average elevation of 5824.7'(12.9%). This is the highest peak elevation the pond has been at in recorded history. The pond filled to 100% capacity and flowed through the spillway on 5/17/94. Leakage through the outlet structure has generally drained and maintained the pond below 10%.

3.2.4.2 Seepage/Wet Areas

Adequate monitoring of the seepage/wet area at the downstream toe cannot be performed unless, at a minimum, vegetation is cut short in the area. The area at the toe, and the leakage from the outlet, are monitored visually to the extent possible during inspections. The upstream end of the wet area was staked during the December inspection so that an increase or decrease at the dam slope can be identified. Inspection and monitoring of seepage quality overall is not possible due to the excessive vegetation, however, inspection of an accessible area indicated moist soil only. Monitoring field sheets were started for the wet area and for the leakage from the outlet and are located in Appendix C of this report.

3.2.5 Recommended Actions

3.2.5.1 Priority Actions

1. Monitor pond elevation in accordance with DIP. (RFOC)
2. Monitor flow from outlet works for change in quantity and turbidity in accordance with the DIP. (RFOC)
3. Monitor seep at toe for changes in area, quantity, and turbidity in accordance with the DIP. (USACE)
4. Grout outlet pipe full to stop the uncontrolled release from pond and prevent potential piping/stability problems, (and remove platform and operating wheel/stem, (RFOC)). (USACE, SE)
5. Remove willows at toe, place sand/rock blanket to allow adequate monitoring of seepage quantity and turbidity and direct water away from the toe. (USACE, SE)
6. Mow dam to allow for proper inspection. (RFOC)

3.2.5.2 Other Recommended Actions

1. Remove trees in spillway to prevent obstruction of spillway flows. (USACE)
2. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (RFOC)
3. Place additional grass seed to provide thicker grass cover where needed. (USACE, SE)
4. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (USACE)
5. Repair new sloughing and erosion in spillway (RFOC).
6. Remove debris on upstream slope (RFOC).

3.2.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include pond elevation monitoring as appropriate, and spring and fall inspections which will include monitoring of all other pertinent items.

3.3 Dam A-2

3.3.1 Dam Condition

The overall condition of this dam is questionable.

3.3.2 Field Observations

6/13/95 Inspection, Water Elevation 5813.4, 56.8% on 6/8/95

The seepage from the dam at the downstream toe could not be assessed due to excessive vegetative growth in the area.

Other items of lesser concern were noted during inspection. As noted in previous inspections, the road through the spillway is higher in elevation than the surrounding bottom elevation of the spillway. New rutting and erosion was found in the spillway from the spring water transfer activities. Minor rutting was found on the dam crest. As also noted in previous inspections, some minor concrete deterioration is present around the joint between the pipe and the concrete box of the uncontrolled outlet intake structure. Riprap is sparse at the outfall of this pipe and at the outfall of the A-1 bypass outlet to Pond A-3. The controlled outlet works are inoperable due to what is believed to be a grout plug installed on the upstream end of the pipe. As found in past inspections, there was no visible flow from the controlled outlet, however, a small amount of water was found standing in the plywood box surrounding the controlled outlet. The condition of the outlet pipe and intake cannot be determined since water in the pond prohibits inspection. However the outlet configuration consists of a 10" iron pipe with upstream and downstream valves, and the pipe is not as likely to be in as poor of condition as Corrugated Metal Pipes in other RFETS Dams. New erosion was found on the right side of the outlet channel that was caused during the May storm by overflow of the A-1 bypass line down the abutment and into the channel (See photograph in Appendix A). There were minor rodent holes in the downstream slope.

12/7/95 Inspection, Water Elevation 5809.5, 24.8% on 12/7/95

All previous findings were still found to be current. The only new finding was high grass on the downstream slope which made inspection difficult.

3.3.3 Actions Performed in 1995

No corrective actions have been performed at this dam in 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.3.4 Monitoring Activities

Monitoring activities at the dam, with the exception of pond elevation monitoring, are currently performed during spring and fall dam inspections. Pond elevation gage rods are the only monitoring instrumentation present at the dam.

3.3.4.1 Pond Elevation

Water elevations at A-2 are monitored weekly, and more frequently if heavy inflow is occurring. Pond A-2 ranged between elevation 5806.9' (10.8%) and 5815.9' (86%) in 1995, and was at an average elevation of 5809.8 (26.8%). This is the highest peak elevation the pond has been at in recorded history. In addition to run-off, water from Pond B-2 has been pumped into Pond A-2 three times this year, and water from Pond A-2 has been pump released twice. The pond was above 50% capacity for a combined total of about one and a half months.

3.3.4.2 Seepage/Wet Areas

Adequate monitoring of the seepage/wet area at the downstream toe cannot be performed unless, at a minimum, vegetation is cut short in the area. The area at the toe is monitored visually to the extent possible during inspections. The upstream end of the wet area was staked during the December inspection so that an increase or decrease at the dam slope can be identified. Inspection and monitoring of seepage quality overall is not possible due to the excessive vegetation, however, inspection of an accessible area indicated standing water with no visible flow. A monitoring field sheet was started for the wet area and is located in Appendix C of this report.

3.3.5 Recommended Actions

3.3.5.1 Priority Actions

1. Monitor pond elevation in accordance with DIP. (RFOC)
2. Monitor seep at toe for changes in area, quantity, and turbidity (in accordance with monitoring guidance (RFOC)). (USACE)
3. Monitor water in box at outlet works for change in quantity and turbidity in accordance with DIP. (RFOC)
4. Remove willows at toe, place sand/rock blanket to allow adequate monitoring of seepage quantity and turbidity and direct water away from toe. (USACE, SE)
5. Regrade road through spillway to grade of spillway so flow is not obstructed (FERC) and repair rutting (RFOC).
6. Mow downstream slope to allow for proper inspection. (RFOC)

3.3.5.2 Other Recommended Actions

1. Repair erosion in outlet channel at toe. (RFOC)
2. Grout outlet full to prevent uncontrolled release from pond and potential future piping/stability problems (or make operational (RFOC)). (USACE, SE)
3. Regrade crest to ensure proper drainage. (USACE)
4. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (USACE, FERC)
5. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (USACE)
6. Repair seal between concrete and uncontrolled outlet conduit and clean out uncontrolled outlet works drop structure to ensure proper functioning. (USACE)

7. Add riprap at outlet of uncontrolled outlet conduit and bypass. (USACE)

3.3.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include pond elevation monitoring as appropriate, and spring and fall inspections which will include monitoring of all other pertinent items.

3.4 Dam A-3

3.4.1 Dam Condition

This overall condition of this dam is poor.

3.4.2 Field Observations

6/13/95 Inspection, Water Elevation 5783.6', 19.6% on 6/13/95

The spillway was severely eroded during flows in May that washed out riprap and soil up to 4 feet deep within the spillway downstream of a concrete cutoff wall located upstream of the dam axis (see photograph in Appendix A). Further spillway flows will cause further erosion that has a high potential to begin eroding the dam embankment, and the material from under and behind the cutoff wall back to the reservoir, thus potentially lowering the spillway crest elevation.

The condition and integrity of the outlet conduit cannot be determined since the valve is located at the downstream end and the water in the pond was not sufficiently low enough to allow inspection from the upstream end. The outlet works, however, are operable and are operated approximately eight to ten times per year. The intake structure also could not be inspected due to the water level in the reservoir.

Other items of lesser concern were noted during inspection. As noted in previous inspections, riprap on the upstream slope is sparse and small slumps are present in some areas. Moderate rutting is occurring on the north end of the dam crest. There are small trees located in the spillway causing minor flow obstruction. The previously identified wet area on the left abutment with tire ruts and wetland vegetation did not appear to have worsened. Vegetation cover on the downstream slope is sparse in areas.

12/7/95 Inspection, Water Elevation 5785.3', 29.4% on 12/7/95

All previous findings were still found to be current. New findings included discolored grass along the abutments in the area of the corrugated metal pipe toe drains, and the outfalls were found to be about one-third full of sediment. The reason for the discoloration of the grass is unknown, however it is not believed to be a dam safety issue at this time. The area will be monitored along with the toe drain outfalls, as discussed below under seepage monitoring.

3.4.3 Actions Performed in 1995

No corrective actions have been performed at this dam in 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.4.4 Monitoring Activities

With the exception of pond elevation and piezometer monitoring, monitoring activities at the dam are currently performed during spring and fall dam inspections.

3.4.4.1 Pond Elevation

Water elevations at A-3 are monitored weekly, and more frequently if discharge or heavy inflow is occurring. Water from the pond is typically released approximately every three months, but releases were performed more often this spring due to heavy inflow. Pond A-3 ranged between elevation 5781.3', 9.7%, and 5793' (100%) in 1995, and was at an average elevation of 5785.5' (30.7%). A-3 was above 50% capacity (elevation 5788.1')

several times for a combined period of approximately a month and a half (see pond elevation/piezometer graphs in Appendix D). On 5/17/95, the pond was filled to 100% capacity and flowed through the spillway. Historical pond elevation graphs indicate that the dam has experienced similar operating conditions in the past, although spillway flows have not been as extensive in the past (recorded or known history).

3.4.4.2 Piezometers

There are four piezometers located in the dam, two in the crest and two at the downstream toe, which are read weekly (See pond elevation/piezometer graphs in Appendix D).

Piezo 1 and 2, crest and toe piezometers respectively, were installed when the dam was built in 1974. These piezometers correlate well, within an approximate two foot range with a response time of approximately one week, with the fluctuation of pond elevation. These piezometers did not exceed previous recorded highs (from data collected since 1991) this year. The screening details and interval of these wells are unknown.

Piezometer wells 046292 and 046492, installed in 1992 at the crest and toe respectively and screened through the entire embankment, have shown no discernible correlation with pond elevations. Following installation, 046292 increased steadily over a twelve month period to its present elevation where it stabilized. The reason for no apparent correlation is unknown at this time, and monitoring of all piezometers will continue so that further data can be collected. Additional field testing of the piezometers, as well as plotting phreatic surfaces on dam cross sections, may provide further insight into the significance of some of the readings. The "spikes" on the piezometer graphs for the toe piezometer 046492 in late April and October 1995 are believed to be due to errant readings, not to actual water elevation fluctuation in the piezometers.

3.4.4.3 Seepage/Wet Areas

The seepage/wet area at the left abutment is monitored visually during inspections. The approximate perimeter of the wet area was staked during the December inspection so that an increase or decrease in seepage area can be identified. At the time of the December inspection, standing water was found in some areas of the seep, with the quality being clear. The seepage from the toe drain outlets was also monitored. No visible flow was seen, only wet soil in the area. Monitoring field sheets were started for both of these monitoring activities and are located in Appendix C.

3.4.5 Recommended Actions

3.4.5.1 High Priority Actions

1. Repair new erosion in spillway. (RFOC)

3.4.5.2 Priority Actions

1. Monitor piezometers and pond elevation in accordance with DIP. (USACE)
2. Inspect intake structure and outlet conduit to ensure integrity intact. (USACE)
3. Install gate on upstream end of outlet conduit to prevent pressurized conduit. (USACE, SE)
4. Monitor left abutment for seepage (and toe drains, in accordance with DIP (RFOC)). (SE)

3.4.5.3 Other Recommended Actions

1. Mow downstream slope to allow for proper inspection. (RFOC)
2. Field test piezometers, plot water surfaces on dam cross-sections and analyze. (RFOC)
3. Revise ERP for dams to include piezometer specific action levels and actions for Dam A-3. (RFOC)
4. Repair sloughs on upstream slope to prevent further slope failure. (USACE, FERC, SE)

5. Remove excess vegetation and trees in spillway and outlet channel to prevent obstruction of flow. (RFOC)
6. Clean sediment out of toe drains to allow proper inspection of seepage quantity and quality. (RFOC)
7. Regrade crest to ensure proper drainage. (USACE)
8. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (USACE, FERC)
9. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (USACE, FERC)

3.4.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include repair of the erosion and removal of the tree in the spillway in March 1996, pond and piezometer elevation monitoring as appropriate, and spring and fall inspections which will include monitoring of all other pertinent items.

3.5 Dam A-4

3.5.1 Dam Condition

The overall condition of this dam is questionable.

3.5.2 Field Observations

6/13/95 Inspection, Water Elevation 5752.2', 27% on 6/15/95

The condition and integrity of the outlet conduit cannot be determined because the valve is located at the downstream end and the water in the pond was not sufficiently low enough to allow inspection from the conduit's upstream end. At the time of this inspection, it was unknown if the outlet works was operable since it had not been operated in at least 4 years. The intake structure also could not be inspected due to the water level in the reservoir. Excessive vegetation in the outlet channel prevented inspection of the downstream end of the outlet for seepage and piping problems.

Other items of lesser concern were noted during inspection. As noted in previous inspections, there is an erosion area on the north end of the crest at the upstream slope. Moderate rutting was found on the dam crest. The old slough area on the left end of the downstream slope does not appear to have worsened, and rodent holes in the area that may have contributed to the sloughing are still present. A previously noted large rodent hole in the center of the dam 5-8 feet down from the crest is also still present. Newly spread hay was found over a portion of the downstream slope, and was thick enough in some areas to potentially kill grass underneath. As previously noted, the spillway has major rutting due to heavy vehicular traffic slightly downstream of the dam. The pumped discharge into the stilling basin does not properly use the energy dissipation structure, although this currently does not appear to be causing structural problems.

11/21/95 Inspection, Water Elevation 5752', 27% on 11/22/95

All previous findings were still found to be current. New findings include a very small surficial slough on the right downstream slope. Additionally, an item noted after the spring inspections is a lack of soil support under the inclinometer and piezometer well concrete pads, believed due to expansion and shrinkage of soils from the heavy spring precipitation. Although likely not detrimental to the piezometer wells, the possible affect to inclinometer readings is discussed below.

3.5.3 Actions Performed in 1995

No corrective actions have been performed at this dam in 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.5.4 Monitoring Activities

3.5.4.1 Pond Elevation

Water elevations at A-4 are monitored three times per week, and more frequently if discharge or heavy inflow is occurring. Water elevations are taken daily under normal filling operations. Pond A-4 ranged in elevation from 5740' (7.8%) to 5753.4' (65.1%) in 1995, and was at an average elevation of 5748.3' (35.7%). A-4 generally fluctuated between 20% and 60% on an approximate six week filling and discharge cycle. It was above 50% (elevation 5751') capacity seven times, for a combined time period of about five months. Historical pond elevation graphs indicate that the pond has reached slightly higher elevations in the past.

3.5.4.2 Piezometers

There are six piezometers located in the dam, three in the crest and three at the downstream toe. The piezometers are routinely read weekly and are read more frequently when ERP "action level" elevations are exceeded.

DH-A1 and DH-A3 (crest and toe respectively) were installed in 1991 with their screened sections isolated in bedrock. DH-A1 has historically correlated well with the fluctuating pond elevations within an approximate three foot range and an almost immediate response time. The piezometer did not exceed any "action level" elevations this year. DH-A3 shows no readily discernible correlation with fluctuating pond elevations and appears to be operating on a cycle that peaks around September and is lowest around March every year. The piezometer's readings this year indicate it will continue to follow its previous cycle and showed no apparent anomalous conditions during high pond levels. The cycle may possibly be due to some type of groundwater cycle in the area, but is not likely due to any changes in the dam.

Piezometer wells A4-94-02 and A4-94-03 (crest) and A4-94-11 and A4-94-12 (toe) were installed in 1994 and are screened through the entire dam embankment. A4-94-02 and A4-94-12 have been dry since installation, and A4-94-11 has been dry or had very little water in it since installation. It appears these piezometers may not respond unless high pond levels are maintained for extended periods of time. A4-94-03, the south crest piezometer, has shown no discernible correlation with pond elevation changes, and experienced a steady increase in elevation starting in June to over the established safety level in November. It remained over the safety level from November 1 through the end of the year, fluctuating several tenths of a foot and exceeding it by up to three tenths. Because of the limited data available for this piezometer, it is not known what level to expect this piezometer to normally operate at. The safety level was established by Woodward Clyde as a projected normal elevation. The factor of safety for the dam section is still well above that normally recommended in a steady state seepage condition.

Monitoring of all piezometers will continue so that further data can be collected for analyses. Additional field testing on the crest piezometers, as well as plotting phreatic surfaces on dam cross sections, may provide further insight into the significance of some of the readings. The "spikes" on the piezometer graphs for A4-94-03 in late April 1995 and mid May are believed to be due to errant readings, not actual water elevation fluctuation in the piezometers.

3.5.4.3 Inclinometers and Movement Monuments

Results from these monitoring activities are currently inconclusive because different monitoring methods did not produce results which correlated to demonstrate movement, or no movement, of the dam embankment. Monitoring has been performed approximately monthly for a year after installation of both inclinometers and movement monuments in order to obtain a statistical baseline and to identify any problems in monitoring techniques. Monitoring is now being performed quarterly unless further conditions develop that indicate more frequent monitoring is necessary.

Inclinometer readings (Appendix E) since 9/94 indicate possible horizontal movement of the dam embankment in the area of the installation of up to approximately an inch and a half at ground surface in the downstream direction, with smaller movement (two tenths of an inch or less) at greater depths. The graph indicates a trend in movement in the downstream direction.

Movement monument measurements in the horizontal direction (graphs located in Appendix D) have not indicated any significant movement or overall trend in movement. Apparent movement indicated on the horizontal movement graph is believed to be attributable to the accuracy of the survey technique rather than movement of the dam embankment itself.

Movement monument measurements in the vertical direction indicated a relatively large apparent movement downward during April and May 1995 and back upward in July and September.

Although it is not currently possible to conclusively say that the apparent movement indicated by the inclinometer is not movement of the dam embankment, it is believed that the inclinometer casing is moving independently of the embankment. A steel casing is grouted around the top of the inclinometer casing, around which a concrete pad is anchored approximately three feet below the top of the casing. The concrete pad is sloping in the downstream direction at the downstream edge of the crest, and it is believed that the weight of the concrete is pulling the casing in a downstream direction. Additionally, recent field inspections found the pad lifted about half an inch from the ground surface and that the top of the casing can be moved an inch or more in any direction by pushing on it. It is believed that the wet weather this spring probably caused some swelling of the soil, and that the subsequent drying of the soil this summer caused shrinkage of the soil under the concrete pad. It is believed that the movement indicated by the inclinometer is due to these factors, rather than movement of the dam embankment itself. Actual movement of the dam embankment of the amount indicated by the inclinometer in the upper ten feet would be expected to be indicated in the horizontal movement measurements for the movement monuments as well, which have not appeared to indicate any real movement. The apparent movement indicated at greater depths is still relatively small at this time. The weight of the unsupported concrete pad may cause additional deflection of the inclinometer casing, as well as the other factors discussed. Dam monitoring personnel are currently pursuing possible solutions to the inclinometer casing problems because actual dam movement may be difficult to differentiate from movement of the inclinometer casing caused by external factors.

It is unlikely that the entire dam embankment would experience a settlement of over a tenth of a foot and then begin to rebound upward, as indicated by the vertical movement measurements for the movement monuments, or that this amount of vertical movement indicating a slope failure would not be accompanied by noticeable movement in the horizontal direction measurements for the movement monuments. Survey notes for monument surveys were re-checked for possible errors and found to be accurate. Because of similar relatively large apparent vertical movement at Dams B-5 and C-2, monitoring personnel believe the off dam monument used as a benchmark for the survey is susceptible to movement and it is no longer being used. It is believed that the benchmark, a 2 1/2 inch diameter aluminum cap on an aluminum pipe 30 inches long encased in concrete, was at a higher elevation during the last four surveys due to extremely wet conditions that caused expansion of the soil around the benchmark. Surveys as of February 1996 are based off of a new off-dam benchmark that is the same as the on-dam monuments that minimize the effects of soil conditions (stainless steel rod driven to refusal, approximately twenty feet below ground surface, with greased fin to allow the immediate ground surface around rod to move without the monument moving).

Baselines will be established for both horizontal and vertical measurements from an average obtained from the year of monitoring, from which all future measurements will be based. Tolerances will also be established based on the data, and any measurements outside of the tolerance will be re-surveyed.

3.5.4.4 Displacement

The slough area at the left abutment is monitored visually during inspections. The area was staked during the October inspection so that further changes can be determined. This area will be monitored during spring and fall inspections unless conditions warrant additional monitoring. A monitoring field sheet was started for this monitoring activity and is located in Appendix C.

3.5.5 Recommended Actions

3.5.5.1 Priority Actions

1. Monitor pond elevation and piezometers in accordance with DIP and perform actions in accordance with ERP, revise ERP as necessary. (RFOC)
2. Monitor movement monuments and inclinometers for movement in accordance with DIP and revise ERP to include actions related to this monitoring. (RFOC)
3. Monitor slough area on downstream slope in accordance with DIP. (RFOC)
4. Operate outlet gate annually. (USACE, SE)
5. Inspect outlet conduit to ensure integrity intact. (RFOC)
6. Install gate on upstream end of the outlet conduit to prevent pressurized conduit. (USACE, SE, WC)
7. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (USACE, FERC)
8. Remove excessive vegetation around outlet and in outlet channel to allow proper inspection and prevent obstruction of flows. (USACE, FERC)

3.5.5.2 Other Recommended Actions

1. Mow downstream slope to allow for proper inspection. (RFOC)
2. Regrade crest and road through spillway to ensure proper drainage and repair erosion. (USACE)
3. Repair cracks/slough in downstream slope to prevent further slope failure and monitor area. (USACE, FERC)
4. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (FERC)
5. Remove/spread hay in excessively thick areas before it kills the grass on the downstream slope. (RFOC)
6. Reseed areas as necessary. (SE)
7. Provide appropriate energy dissipation for pumping operations if they are to continue. (WC)

3.5.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include placement of upstream gates on the outlet conduit in March 1996, spring and fall inspections, and monitoring as appropriate. The outlet valves were used to release water from the pond in February 1996 and were found to be operational.

3.6 Dam B-1

3.6.1 Dam Condition

The overall condition of this dam is questionable.

3.6.2 Field Observations

6/13/95 Inspection, Water Elevation 5880.2', 66% on 6/8/95

Since reconstruction on the dam was completed in 1994, cloudy water has been observed in Pond B-2 in the area believed to be an exit for one of the toe drain pipes of Dam B-1. Because the area has been submerged, a

determination could not be made of whether the cloudy water was due to fines from the dam embankment in the seepage, or from sediment suspended from the B-2 pond bottom. Cloudy water was not found during this inspection, possibly due to the water levels in the ponds having insufficient head differential to cause the condition. The longitudinal crack observed in the previous inspection on the upstream portion of the crest was not found during this inspection. Cracking on the downstream slope, believed to be desiccation cracking, was still present but appeared to have improved.

Other items of lesser concern were noted during inspections. Minor rutting was found on the dam crest and at the spillway road crossing. The spillway slope does not allow for proper drainage and had water pooling in it. Minor rodent holes were found in the dam abutments.

11/20/95 Inspection, Water Elevation 5877.8', 23% on 11/22/95

All previous findings were still found to be current. New findings include excessive vegetation growing on the upstream slope. Also, cracks up to three feet deep were found in the downstream slope at the approximate middle of the dam about a third of the way down the slope. Cloudy water was observed in Pond B-2 at the toe drain outfall during this inspection. The combination of the cracking and the potentially cloudy seepage raises concerns about the stability of the dam, and both conditions will be watched and monitored closely.

3.6.3 Actions Performed in 1995

No corrective actions have been performed at this dam in 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.6.4 Monitoring Activities

Monitoring activities at the dam, with the exception of pond and piezometer elevation monitoring, are currently performed during spring and fall dam inspections. Pond elevation gage rods are the only monitoring instrumentation present at the dam.

3.6.4.1 Pond Elevation

Water elevations at B-1 are monitored weekly, and more frequently if heavy inflow is occurring. Pond B-1 ranged between elevation 5876' (2.5%) and 5880.2' (66%) in 1995, with an average elevation of 5878 (25%). It was above 50% (elevation 5879.4) capacity several times, for a combined period of roughly two months, reaching a high of 66% on 5/18/95 and 66% again for a sustained period from 6/8/95 to 6/15/95. Water has been pumped from Pond B-1 to Pond B-2 four times this year. These are the highest peak elevations recorded for Pond B-1 during the past two years.

3.6.4.2 Piezometers

There are two piezometers located in the dam, one in the crest and one at the downstream toe, which were generally read weekly (See piezometer graphs in Appendix D). Both piezometers, installed in 1992 and screened through the entire dam embankment, correlate somewhat with the fluctuation of the pond elevation. Both piezometers exceeded previous historic high elevations by nearly a foot in the spring of 1995.

3.6.4.3 Seepage/Wet Areas

The seepage from the toe drain is monitored visually to the extent possible during inspections, and a monitoring field sheet was started during the November inspection and is located in Appendix C of this report. Additionally, the larger crack was staked during the November inspection so that changes can be measured, and a monitoring field sheet was started and is located in Appendix C.

3.6.5 Recommended Actions

3.6.5.1 Priority Actions

1. Monitor seepage in accordance with DIP. (RFOC)
2. Monitor pond elevation and piezometers in accordance with DIP. (RFOC)
3. Mow downstream slope to allow for proper inspection. (RFOC)

3.6.5.2 Other Recommended Actions

1. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (RFOC)
2. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (USACE, FERC)
3. Place additional grass seed to provide thicker grass cover where necessary. (RFOC)
4. Re-compact/grade ruts in dam crest. (RFOC)
5. Regrade spillway to allow for proper drainage. (RFOC)

3.6.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include pond and piezometer elevation monitoring as appropriate, and spring and fall inspections which will include monitoring of all other pertinent items.

3.7 Dam B-2

3.7.1 Dam Condition

The overall condition of this dam is questionable.

3.7.2 Field Observations

Inspected 6/13/95, Water Elevation 5866.7', 62% on 6/8/95

The seepage from the dam at the downstream toe could not be assessed due to excessive vegetative growth in the area. Additionally, leakage through a hole corroded in the bottom at the inlet end of the outlet conduit has increased since the previous inspection, and inspection of the entire length of the pipe could not be performed to determine the condition of the rest of the conduit. The leak in the upper left portion of the uncontrolled inlet between the outlet conduit and the concrete structure was not observed during this inspection. Extensive corrosion and rust is present in the observable portions of the conduit. The leakage was clear at the time of inspection.

Other items of lesser concern were noted during inspections. Debris was found in the spillway. The road through the spillway is higher in elevation than the surrounding bottom elevation of the spillway and a ponding area is present at the toe of the spillway. Minor sloughing was found along the north spillway side slope and there is heavy rutting in the spillway from the placement of a pump during transfer operations. The crest appeared to be lower in the middle which may allow ponding. A large rodent hole was found on the downstream slope. Desiccation cracking observed in previous inspections was not found in this inspection, likely due to high moisture in soils.

11/20/95 Inspection, Water Elevation 5865.8', 47.3% on 11/22/95

All previous findings were still found to be current, with the exception of the seepage area at the toe which had a sand/rock blanket placed on it at the time of this inspection. The seepage water at the pipe outfall from the drain could not be inspected since it was under water from the tailwater of B-3, however, it is assumed that the blanket is functioning adequately as seepage/piping control. New findings included shallow desiccation cracking at the right abutment. There was visible flow from the in the bottom of the CMP outlet conduit, and although it is difficult to quantify the progression of the corrosion, it is likely worsening.

3.7.3 Actions Performed in 1995

A sand/rock blanket was placed on the seepage/wet area at the downstream toe in September 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.7.4 Monitoring Activities

Monitoring activities at the dam, with the exception of pond elevation monitoring, are currently performed during spring and fall dam inspections. Pond elevation gage rods are the only monitoring instrumentation present at the dam.

3.7.4.1 Pond Elevation

Water elevations at B-2 are monitored weekly, and more frequently if heavy inflow is occurring. Pond B-2 ranged between 5862.5' (10.7%) and 5868.1' (86%), and was at an average elevation of 5865.7' (45.3%). This is the highest peak elevation the pond has been at in recorded history. B-1 pond water, pumped into the B-2 pond three times, filled the B-2 pond up to 86%, which was then pumped to Pond A-2. Pond B-2 was been above 50% capacity for a combined total of approximately six months in 1995.

3.7.4.2 Seepage/Wet Areas

The seepage at the toe is monitored visually to the extent possible during inspections. A sand/rock blanket was placed over the area as discussed above. Leakage from the outlet conduit is also monitored visually during inspection. A monitoring field sheet was started for the leakage during the November inspection and is located in Appendix C of this report. Leakage water has been clear.

3.7.5 Recommended Actions

3.7.5.1 Priority Actions

1. Monitor flow from outlet structure for change in quantity and turbidity (in accordance with DIP (RFOC). (USACE, SE)
2. Monitor seep at toe for changes in quantity and turbidity (when possible, in accordance with DIP (RFOC)). (USACE)
3. Seal leak between outlet conduit and concrete inlet structure/slip-line outlet conduit with plastic liner or grout outlet full to prevent potential stability problems and/or uncontrolled release. (USACE)
4. Monitor undercutting at outlet drop structure. (RFOC)

3.7.5.2 Other Recommended Actions

1. Mow dam so that adequate inspection can be performed. (RFOC)
2. Regrade crest to ensure proper drainage. (USACE)
3. Repair new sloughing and erosion in spillway (RFOC).
4. Remove debris in spillway to prevent obstruction of spillway flows. (RFOC)

5. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (RFOC)
6. Place additional grass seed to provide thicker grass cover where needed. (RFOC)
7. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (USACE)
8. Remove debris on upstream slope (RFOC).

3.7.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include pond elevation monitoring as appropriate, and spring and fall inspections which will include monitoring of all other pertinent items.

3.8 Dam B-3

3.8.1 Dam Condition

The overall condition of this dam is questionable.

3.8.2 Field Observations

6/13/95 Inspection

The seepage from the dam at the downstream toe could not be assessed due to excessive vegetative growth in the area. There are also trees in the spillway at the outfall to the B-1 bypass outfall channel to Pond B-4 that have been previously noted as recommended to be removed. The trees have grown to sufficient size that they are now a major obstruction to spillway flow. Riprap protection at the spillway outfall is sparse and extensive erosion back towards the dam is likely during spillway flows.

Other items of lesser concern were noted during inspections. Debris was found in the spillway as in previous inspections. Some minor concrete deterioration was noted around the joint between the pipe and the concrete box of the uncontrolled intake structure. The controlled outlet works are operated daily. Inspection of the controlled outlet works conduit could not be performed due to the water level of the pond. The uncontrolled outlet conduit was inspected at both ends and showed little rusting or corrosion. Minor erosion was found on the abutments. Desiccation cracking observed in previous inspections was not found in this inspection, likely due to high moisture in soils.

10/21/95 Inspection

All previous findings were still found to be current. The erosion around and under the outlet conduit flared end section was found to be worsening and it is possible that all soil support has washed out from under it. The only new finding was the high grass on the downstream slope which made inspection difficult.

3.8.3 Actions Performed in 1995

No corrective actions have been performed at this dam in 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below. The outlet valve is operated daily.

3.8.4 Monitoring Activities

With the exception of piezometer monitoring, monitoring activities at the dam are currently performed during spring and fall dam inspections. Water elevations at B-3 are not monitored. The pond receives and releases treated wastewater effluent daily.

3.8.4.1 Piezometers

There are two piezometers located in the dam, one in the crest and one at the downstream toe, which are read weekly (See piezometer graphs in Appendix D). Both piezometers, installed in 1992 and screened through the entire dam embankment, appear to likely correlate well with the fluctuation of the pond elevation although pond elevations are not monitored. The piezometer elevations exceeded previous historic highs in the spring of 1995 by less than a foot.

3.8.4.2 Seepage/Wet Areas

Adequate monitoring of the seepage/wet area at the downstream toe cannot be performed unless, at a minimum, vegetation is cut short in the area. The area at the toe is monitored visually to the extent possible during inspections. The upstream ends of the wet area were staked during the October inspection so that an increase or decrease up the slope of the dam can be identified. Inspection and monitoring of seepage quality overall is not possible due to the excessive vegetation, however, inspection of an accessible area indicated moist soil only. A monitoring field sheet was started for the wet area and is located in Appendix C of this report.

3.8.5 Recommended Actions

3.8.5.1 Priority Actions

1. Monitor seep at toe for changes in quantity and turbidity. (USACE)
2. Remove willows and cattails at toe, place sand/rock blanket to allow adequate monitoring of seepage quantity and turbidity and direct water away from toe. (USACE)
3. Remove trees from spillway. Add riprap to spillway and bypass channel to prevent major erosion from spillway flows. (USACE)
4. Lubricate and operate outlet gate annually. (SE)
5. Monitor piezometers in accordance with DIP. (RFOC)
6. Mow dam so that adequate inspection can be performed. (RFOC)

3.8.5.2 Other Recommended Actions

1. Remove debris in spillway to prevent obstruction of spillway flows. (USACE)
2. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (USACE)
3. Place additional grass seed to provide thicker grass cover where needed. (RFOC)
4. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (USACE)
5. Seal between outlet conduit and concrete inlet structure and slip-line outlet conduit with plastic liner to prevent potential stability problems and/or uncontrolled release. (USACE)

3.8.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include piezometer elevation monitoring as appropriate, and spring and fall inspections which will include monitoring of all other pertinent items. The outlet valve will continue to be operated daily.

3.9 Dam B-4

3.9.1 Dam Condition

The overall condition of this dam is questionable.

3.9.2 Field Observations

6/13/95 Inspection

The seepage from the dam at the downstream toe could not be assessed due to excessive vegetative growth in the area. Additionally, there is increasing erosion around the concrete box structure and weir at the inlet to the concrete spillway.

Other items of lesser concern were noted during inspections. There is moderate rutting in the dam crest. As in previous inspections, some concrete deterioration is occurring in the concrete spillway chute and there is grass growing out of cracks in the chute. There is likely leakage from the joints in the chute. Small trees were found growing in the downstream slope. Riprap is sparse at the stilling basin and an undercutting potential is present, but the basin held up well during high spillway flows in May.

10/21/95 Inspection

All previous findings were still found to be current, with the exception of the seepage area at the toe which had a sand/rock blanket placed on it at the time of this inspection. Riprap was also placed in the stilling basin. The seepage water at the outfall into the channel could not be inspected since it was under water from the outflow from B-4, however, it is assumed that the blanket is functioning adequately as seepage/piping control. The erosion around the weir and concrete box had increased. New findings included high grass on the downstream slope which made inspection difficult, a fairly deep but short crack in the downstream slope, minor rodent holes, and erosion on the left side of the spillway chute.

3.9.3 Actions Performed in 1995

A sand/rock blanket was placed on the seepage/wet area at the downstream toe in September 1995 and additional riprap was placed in the stilling basin. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.9.4 Monitoring Activities

Monitoring activities at the dam are currently performed during spring and fall dam inspections. The pond elevation is not monitored since this is a flow through structure, and no instrumentation is present at the dam.

3.9.4.1 Seepage/Wet Areas

The seepage at the toe is monitored visually to the extent possible during inspections. A sand/rock blanket was placed over the area as discussed above.

3.9.5 Recommended Actions

3.9.5.1 Priority Actions

1. Monitor seep at toe for changes in quantity and turbidity (in accordance with DIP (RFOC)). (USACE, SE)
2. Monitor cracks and concrete deterioration in spillway chute (in accordance with DIP (RFOC)) and repair as necessary. (USACE, SE)
3. Repair undercutting at weir and concrete box structure or remove structures. (USACE)

4. Mow downstream slope so that adequate inspection can be performed. (RFOC)

3.9.5.2 Other Recommended Actions

1. Remove trees from downstream slope. (RFOC)
2. Regrade crest to ensure proper drainage. (USACE)
3. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (RFOC)
4. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (USACE)

3.9.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include spring and fall inspections which will include monitoring of all other pertinent items.

3.10 Dam B-5

3.10.1 Dam Condition

The overall condition of this dam is questionable.

3.10.2 Field Observations

6/1/95 Inspection, Water Elevation 5790.8', 25.8% on 6/1/95

The condition and integrity of the outlet conduit cannot be determined since the valve is located at the downstream end and the water in the pond was not sufficiently low enough to allow inspection from the upstream end. The outlet valves were operated in May when the inflow exceeded pumping capabilities. The intake structure also could not be inspected due to the water level in the reservoir. Excessive vegetation in the outlet channel prevented inspection of the downstream end of the outlet for seepage and piping problems.

Other items of lesser concern were noted during inspection. As noted in previous inspections, the surface of the crest is uneven with ponding areas. A new relatively small slough area, approximately eight by sixteen feet, was found on the downstream edge and is being monitored. A large rodent hole was found in the area of the slough, and it is believed that the rodent activity carried soil out of the dam embankment, causing the slough. Transfer pipes were located on the crest and in the spillway channel at the time of this inspection, which were later removed. Revegetation is needed on left abutment. Fill material from the installation of a downstream toe piezometer is eroding in to the outlet stilling basin and there is extensive cattail growth in the outlet channel which causes some flow obstruction and makes inspection for potential piping around the outlet conduit difficult. The previously identified groundwater seep at the downstream toe right abutment was flowing. The crack in the crest that has been noted in previous inspections was not present, likely due to high moisture in the soil at the time of the initial inspection. Subsequent inspections have found fairly extensive desiccation cracking throughout the crest of the dam.

11/21/95 Inspection, Water Elevation 5796.1', 48.2% on 11/22/95

All previous findings were still found to be current. New findings included cracking up to one and a half feet deep around the previously noted slough area, as well as extensive rodent activity in the area. The high grass made inspection of the downstream slope very difficult. Additionally, an item noted after the spring inspections is a lack of soil support under the inclinometer and piezometer well concrete pads, believed due to expansion and shrinkage of soils from the heavy spring precipitation. Although likely not detrimental to the piezometer wells, the possible affect to inclinometer readings is discussed below.

3.10.3 Actions Performed in 1995

No corrective actions have been performed at this dam in 1995. The outlet valves were operated in the spring of 1995 and found to be operable. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.10.4 Monitoring Activities

3.10.4.1 Pond Elevation

Water elevations at B-5 are monitored daily, and more frequently if heavy inflow is occurring. Pond B-5 ranged between elevation 5785.1' (10.5%) and 5798.8' (63.6%) in 1995, and was at an average elevation of 5792.4' (31.7%). B-5 was generally been above 20% and less than 60% fluctuating on an approximate six week filling and discharge cycle. It was above 50% capacity for a combined time period of about two months, reaching its high on 5/17/95. Historical pond elevation graphs indicate that this is not the highest peak elevation the pond has been at, and that the pond has been in this elevation range several times during the past four years.

3.10.4.2 Piezometers

There are seven piezometers located in the dam, five in the crest and two at the downstream toe. The piezometers are routinely read weekly and are read more frequently when ERP "action level" elevations are exceeded.

Crest piezometers WH-1, WH-2, WH-3, and toe piezometer WH-4 were installed in 1984. The screening details are not known. Piezometers B5-94-05, B5-94-06, and B5-94-11, two crest and one toe, respectively, were installed in 1994. B5-94-05 is isolated in bedrock and the other two piezometers are screened throughout their length in the embankment. All piezometers, with the exception of WH-3 and B5-94-06, exceeded previous highs this spring, and many exceeded "action level" elevations as discussed below.

WH-1, WH-2, and WH-3 have generally correlated well with the fluctuating pond elevations. A high ground water table in the area is indicated by seepage on the hillside at the south end of the dam near the right downstream abutment. It is believed that this may always augment the WH-3 level in conjunction with the pond elevation, and is also believed to influence some of the other piezometers as noted. WH-3 performed as it historically has and did not exceed any "action level" elevations. WH-2 displayed some unusual responses in May that are believed to be due to ground water influence since they occurred after relatively heavy precipitation was experienced. WH-2 exceeded the lower "action level" elevation three times this spring, remaining over this elevation for a combined total of about three weeks. WH-2 also exceeded the upper "action level" elevation once for two days. WH-1 performed as it has historically, and did not exceed any "action level" elevations. WH-1 is on the north side of the dam and would generally not be expected to show any influence from ground water.

B5-94-05 indicated a correlation with the fluctuating pond elevations and showed an upward trend in elevations this spring which may be due to the groundwater influence. B5-94-05 exceeded the established lower "action level" elevation many times in 1995. B5-94-06 showed no discernible correlation with pond elevation, however, the permeability testing performed on this piezometer when installed indicates the permeability at the well is relatively low. B5-94-06 did not exceed any "action level" elevations. The downward trend of the piezometer since installation may be due to the dissipation of water from the well after it was filled with water for the permeability testing.

WH-4 showed no readily discernible correlation with fluctuating pond elevations and appears to be operating on a cycle that peaks in April and is lowest around September every year. The piezometer showed some unusual responses this spring, and exceeded the lower "action level" elevation once for a day in spring 1995. The apparent yearly cycle of the piezometer, as well as the unusual responses and higher than normal elevations, are believed to be due to the groundwater influence in the area. B5-94-11 is fairly new, but appears to be following much the same cycle and responses as WH-4 at this time. B5-94-11 was over the lower "action level" elevation twice this year for a combined total of about a three weeks.

Regardless of whether the pond elevation is the sole source of water in the dam embankment, or ground water in the area is contributing as well, the degree of saturation of the dam embankment is the primary concern. Pond elevation is a primary influence on the degree of saturation and, subsequently, the piezometers. During May, WH-2 and the toe piezometers indicated a relatively highly saturated dam embankment. The downstream slope of the dam embankment (maximum section) at WH-2, upon exceeding "action level" elevations, has factors of safety for downstream slope failure that are lower than recognized standards. Although groundwater appears to have influenced the degree of saturation to some extent, elevated pond levels during April and May contributed to saturated condition within the embankment.

Monitoring of all piezometers will continue so that further data can be collected for analyses. Additional field testing on the crest piezometers, as well as plotting phreatic surfaces on dam cross sections, may provide further insight into the significance of some of the readings.

3.10.4.3 Inclinometers and Movement Monuments

Results from these monitoring activities are currently inconclusive because different monitoring methods did not produce results which correlated to demonstrate movement, or no movement, of the dam embankment. Monitoring was performed approximately monthly for a year after installation of both inclinometers and movement monuments in 1994 in order to obtain a statistical baseline and identify any problems in monitoring techniques. Monitoring is now being performed quarterly unless further conditions develop that indicate more frequent monitoring is necessary.

Inclinometer readings (Appendix E) since 9/94 indicate possible horizontal movement of the dam embankment in the area of the installation of approximately seven tenths of an inch at I1 and slightly less than five tenths of an inch at I2 at ground surface in the downstream direction. At depths of ten feet or greater, I1 shows one tenth of an inch or less of movement and I2 shows little discernible movement. The graph for I1 indicates a trend in movement in the downstream direction in the upper ten feet, and the graph for I2 indicated a trend in movement in the downstream direction through May in the upper ten feet, after which the upper seven feet showed movement back in the upstream direction, and then again in the downstream direction.

The horizontal movement monument measurements in the horizontal direction (graphs located in Appendix D) are difficult to interpret since they seem to vary relatively widely, however, they do not indicate significant movement or overall trend in movement. Apparent movement indicated on the horizontal movement graph is believed to be attributable to the accuracy of the survey technique rather than movement of the dam embankment itself.

Movement monument measurements in the vertical direction indicated a relatively large apparent movement upward during July 1994 and back down in August.

Although it is not possible to say conclusively at this time that the apparent movement indicated by the inclinometer is not movement of the dam embankment, it is believed that the inclinometer casing is moving independently of the embankment. A steel casing is grouted around the top of the inclinometer casing, around which a concrete pad is anchored approximately three feet below the top of the casing. The concrete pad is sloping in the downstream direction at the downstream edge of the crest, and it is believed that the weight of the concrete is pulling the casing in a downstream direction. Additionally, field inspections in late summer found that the pad lifted about half an inch from the ground surface and that the top of the casing can be moved an inch or more in any direction by pushing on it. It is believed that the wet weather this spring probably caused some swelling of the soil, and that the subsequent drying of the soil this summer caused shrinkage of the soil under the concrete pad. It is believed that the movement indicated by the inclinometer is due to these factors, rather than movement of the dam embankment itself. It is possible that the upper portion of the dam experienced some small movement due to the excessively wet conditions experienced this spring, which somewhat stabilized upon drying out, however, actual movement of the dam embankment of the amount indicated by the inclinometer in the upper ten feet would be expected to be indicated in the horizontal movement measurements for the movement monuments as well, which have not indicated any apparent real movement. Any apparent movement indicated at greater depths is still relatively small at this time. The weight of the unsupported concrete pad may cause additional deflection of the inclinometer casing, as well as the other factors discussed. Dam monitoring personnel are currently pursuing

possible solutions to the problems with the inclinometer casings since actual dam movement may be difficult to differentiate from movement of the inclinometer casing caused by the external factors.

It is unlikely that the entire dam embankment would heave over five hundredths of a foot and then settle downward again as indicated by the vertical movement measurements for the movement monuments. Survey notes for monument surveys were re-checked for possible errors and found to be accurate. Because of this, monitoring personnel believed the off dam monument used as a benchmark for the survey was susceptible to movement and abandoned the use of it after the fourth reading. It is believed that the benchmark, a 2 1/2 inch diameter aluminum cap on an aluminum pipe 30 inches long encased in concrete, was at a lower elevation during the July reading, possibly due to wet spring conditions causing expansion of the soil around the benchmark followed by drying shrinking of the soil that caused lowering of the benchmark. Surveys after August 1994 were based off of a new off-dam benchmark that is the same as the on-dam monuments that minimize the effects of soil conditions (stainless steel rod driven to refusal, approximately twenty feet below ground surface, with greased fin to allow the immediate ground surface around rod to move without the monument moving).

Baselines will be established for both horizontal and vertical measurements from an average obtained from the year of monitoring, from which all future measurements will be based. Tolerances will also be established based on the data, and any measurements outside of the tolerance will be re-surveyed.

3.10.4.4 Displacement

The slough on the downstream slope found in April was monitored for changes weekly through May, and will now be monitored as part of spring and fall inspections unless conditions warrant additional monitoring. No additional movement was found in the area until May, at which time it was noted that the stakes in the area had moved downward (sunk) about an inch. No additional movement has been noted since then. This would support the theory that the rodent activity in the area, as indicated by the large rodent hole and extensive smaller rodent holes in the area, may have carried soil out of the dam embankment. A copy of the monitoring checklist is contained in Appendix C.

3.10.5 Recommended Actions

3.10.5.1 Priority Actions

1. Monitor pond elevation and piezometers in accordance with DIP and perform actions in accordance with the ERP, revise ERP as necessary. (USACE, SE)
2. Monitor movement monuments and inclinometers for movement in accordance with DIP and revise ERP to include actions related to this monitoring. (RFOC)
3. Monitor slough in accordance with DIP. (RFOC)
4. Operate gate annually. (USACE, SE)
5. Inspect outlet conduit to ensure integrity intact. (RFOC)
6. Install gate on upstream end of outlet conduit to prevent pressurized conduit. (USACE, SE)
7. Repair slough, fill rodent holes and control rodent activity to prevent possibility of direct flow through holes and additional removal of soil from the dam embankment. (USACE)
8. Remove excessive vegetation in outlet channel to allow proper inspection and prevent obstruction of flows. (FERC)

3.10.5.2 Other Recommended Actions

1. Regrade crest to ensure proper drainage. (RFOC)
2. Remove fill material from toe of dam and clean outlet basin. (RFOC)

3. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through the embankment. (FERC)

4. Place additional grass seed to provide thicker grass cover as necessary. (SE)

3.10.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include spring and fall inspections, and monitoring as appropriate. The pipe on the dam crest was removed in February 1996.

3.11 Dam C-1

3.11.1 Dam Condition

The overall condition of this dam is poor.

3.11.2 Field Observations

5/30/95 Inspection

Spillway flow during May caused extensive erosion at the end of the concrete spillway slab (see photograph in Appendix A). A hole three to four feet deep and approximately twenty feet square was eroded at the end of the slab, and lesser erosion was caused further downstream and upstream of the slab. The spillway flow washed most riprap protection upstream and downstream of the slab out of the spillway channel.

The lower part of the dam slope was wet and standing water was found at the downstream toe. The standing water was clear, indicating no loss of fines from the dam. Additionally, tire ruts on the crest were about four inches deep and full of water. This condition will lead to further saturation of the dam embankment. During more recent inspections, extensive desiccation cracking was found in the tire ruts, up to one foot in depth. This condition increases embankment saturation problems by allowing water to fill up the cracks. The combination of the standing water at the toe, tire ruts, and cracks, is considered a potentially serious threat to the integrity of the dam.

Other items of lesser concern were noted during inspections. Desiccation cracks and minor tire ruts were found on the downstream slope. Minor cracking and concrete deterioration were noted in the concrete spillway slab. Small trees were found in the entrance to the spillway. Some minor concrete deterioration was noted around the joint between the pipe and the concrete headwall of the entrance to the outlet structure. The main slide gate to the outlet conduit is operational and exercised yearly, however a small butterfly valve located on this gate is inoperable in the open position. Minor bulging and rusting was found in the bottom of the outlet conduit, as noted in previous inspections. As noted in previous inspections, a joint at the downstream end of the outlet conduit between the corrugated metal pipe sections has separated slightly and may be allowing water direct access to the dam embankment at that point for potential erosion. Some erosion was found in the outlet channel, as has been previously noted. Runoff during the spring formed a small erosion gully near the right abutment.

10/31/95 Inspection

All previous findings were still found to be current. New findings included a slough in the downstream slope near the left abutment which is about ten feet long, soft spots and minor cracking and erosion rills in the downstream slope, and a relatively long crack about ten inches in depth in the left abutment. Monitoring of the slough and the seepage/wet area at the downstream toe is discussed further below, however, the seepage showed signs of carrying sediment during this inspection. These new findings add greatly to the concern about the integrity of the dam.

3.11.3 Actions Performed in 1995

No corrective actions have been performed at this dam in 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.11.4 Monitoring Activities

Monitoring activities at the dam are currently performed during spring and fall dam inspections. Water elevations at C-1 are not monitored since it operates as a flow-through structure, however, the pond did reach an elevation within about a foot of the dam crest on May 17 with flow through the spillway.

3.11.4.1 Seepage/Wet Areas

Adequate monitoring of the seepage/wet area at the downstream toe cannot be performed unless, at a minimum, vegetation is cut short in the area. The area at the toe is monitored visually to the extent possible during inspections. The upstream ends of the wet area were staked during the October inspection so that an increase or decrease up the slope of the dam can be identified. Inspection and monitoring of seepage quality overall is difficult due to the excessive vegetation, however, inspection of an accessible area indicated about one to two inches of water at the toe with visible movement of the water and sediment. This is a potentially serious condition, although it is not known if the sediment is from the dam at this time. A monitoring field sheet was started for the wet area and is located in Appendix C of this report. The slough found during the October inspection was staked so that changes can be measured, and a monitoring field sheet was started and is located in Appendix C of this report.

3.11.5 Recommended Actions

3.11.5.1 High Priority Actions

1. Repair spillway erosion. (RFOC)
2. Remove willows and cattails at toe, place sand/rock blanket to allow adequate monitoring of seepage quantity and turbidity and direct water away from toe. (USACE, SE)
3. Regrade crest and right abutment to remove rutting and ensure proper drainage. (USACE, SE)
4. Repair cracks in dam embankment as necessary. (USACE, SE)

3.11.5.2 Priority Actions

1. Monitor seep at toe (in accordance with DIP (RFOC)). (USACE)

3.11.5.3 Other Recommended Actions

1. Repair butterfly valve and lubricate and operate outlet gate annually. (SE)
2. Repair separation between outlet pipes or slip-line outlet conduit with plastic liner to prevent potential stability problems and/or erosion. (USACE)
3. Remove trees and excessive vegetation in spillway to prevent obstruction of spillway flows. (USACE)
4. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through embankment. (USACE)

3.11.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include spring and fall inspections, and monitoring as appropriate.

3.12 Dam C-2

3.12.1 Dam Condition

The overall condition of this dam is questionable.

3.12.2 Field Observations

5/30/95 Inspection, Water Elevation 5760.8', 54% on 5/30/95

The condition and integrity of the outlet conduit cannot be determined because the valve is located at the downstream end and the water in the pond was not sufficiently low enough to allow inspection from the upstream end. It is unknown if the outlet works are operable, or would be able to be used in an emergency, since they have not been operated in at least 4 years and most likely not since 1989. The intake structure also could not be inspected due to the water level in the reservoir. Excessive vegetation in the outlet channel prevented inspection of the downstream end of the outlet for seepage and piping problems.

A longitudinal crack was found on the crest along the upstream slope running intermittently throughout the length of the crest. The crack was 1/8" to 1/2" wide and approximately one foot to eighteen inches deep. It is unknown at this time the exact cause of the crack. The crack may be due to separation of the riprap and bedding layer on the upstream slope from the soil embankment, or possibly due to the start of a shallow surface slough caused by wet conditions during the spring. The crest was closed off to unnecessary traffic following this inspection and the crack is being monitored as described below. Major tire rutting up to three inches in depth was found in the crest at the time of inspection, but has since been repaired.

Other items of lesser concern were noted during inspection. Transfer pipes where present on the crest which were later removed. As previously noted, treatment units are located in the spillway and roads located in the spillway expose bare soil that would likely erode extensively during spillway flows.

11/20/95 Inspection, Water Elevation 5756', 21.3% on 11/22/95

All previous findings were still found to be current. Monitoring of the crack is discussed below, however, in general it has improved since the previous inspection and does not appear to indicate a dam stability concern at this time. The deep tire ruts had been filled at the time of this inspection, however additional crest grading is still needed. New findings included an item found after the spring inspections, which is a lack of soil support under the inclinometer and piezometer well concrete pads, believed due to expansion and shrinkage of soils from the heavy spring precipitation. Although likely not detrimental to the piezometer wells, the possible affect to inclinometer readings is discussed below.

3.12.3 Actions Performed in 1995

The deep rutting in the crest was repaired in the summer of 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.12.4 Monitoring Activities

3.12.4.1 Pond Elevation

Water elevations at C-2 are monitored three times per week, and more frequently if heavy inflow is occurring. Pond C-2 ranged between elevation 5755.5' (18.9%) and 5763.5' (79.1%) in 1995, and was at an average elevation of 5757.5' (29.9%). C-2 was 50% capacity for a combined time period of about one month. Historical pond elevation graphs indicate that this is the highest peak elevation the pond has been at in recorded history.

3.12.4.2 Piezometers

There are seven piezometers located in the dam, three in the crest and four at the downstream toe. The piezometers are routinely read weekly and are read more frequently when ERP "action level" elevations are exceeded. DH-C1 and DH-C2 (crest and toe respectively) were installed in 1991 with their screened sections isolated in bedrock.

DH-C1 has historically correlated fairly well with the fluctuating pond elevations with a response time of about two weeks. The piezometer did not exceed any "action level" elevations this spring. The "spike" on the graph in August is likely due to an erroneous reading rather than an actual water elevation change. DH-C2 shows no readily discernible correlation with fluctuating pond elevations and appears to be operating on a cycle that peaks

around January and bottoms out around August every year. Piezometer readings this year indicate it will follow its previous cycle and showed no apparent anomalous conditions during high pond levels. The cycle may possibly be due to a groundwater cycle in the area, but is not likely due to any changes in the dam.

Piezometer wells C2-94-02 and C2-94-03 (crest) and C2-94-11, C2-94-12A, and C2-94-13A (toe) were installed in 1994 and are screened through the entire dam embankment. C2-94-11 and C2-94-13A are the only newly installed piezometers at Dam C-2 that show any apparent correlation with pond elevations. However, there is currently insufficient data to establish any real correlation with these two piezometers at this time because peaks by these piezometers during May may be partially attributed to groundwater influences. The "spike" in the graph for C2-94-11 in September is likely due to an erroneous reading rather than an actual water elevation change. Piezometers C2-94-11 and C2-94-13A exceeded "action level" elevations on May 18 and 17 respectively and remained above their limits for slightly over a month, reaching peaks of 1.85 feet and 1.07 feet over their limits on May 30 and May 17, respectively. The downward trend of the new piezometers since installation may be due to the dissipation of water from the well after it was filled with water for permeability testing.

Monitoring of all piezometers will continue so that further data can be collected for analyses. Additional field testing on the crest piezometers, as well as plotting phreatic surfaces on dam cross sections, may provide further insight into the significance of some of the readings.

3.12.4.3 Inclinometers and Movement Monuments

Results from these monitoring activities are currently inconclusive because different monitoring methods did not produce results which correlated to demonstrate movement, or no movement, of the dam embankment. Monitoring was performed approximately monthly for a year after installation in 1994 of both inclinometers and crest monuments in order to obtain a statistical baseline and identify any problems in monitoring techniques. Monitoring is now being performed quarterly unless further conditions develop that indicate more frequent monitoring is necessary.

Inclinometer readings (Appendix E) since 9/94 indicate possible horizontal movement of the dam embankment in the area of the installation of approximately three tenths of an inch in the downstream direction in the upper ten feet of the inclinometer. At depths of ten feet or greater the inclinometers show little discernible movement. The readings indicate a trend in movement in the downstream direction through May in the upper ten feet, after which the upper seven feet showed movement back in the upstream direction.

The horizontal movement monument measurements in the horizontal direction (graphs located in Appendix D) are difficult to interpret since they seem to vary relatively widely, however, they do not indicate significant movement or overall trend in movement. Apparent movement indicated on the horizontal movement graph is believed to be attributable to the accuracy of the survey technique rather than movement of the dam embankment itself. In several cases the readings indicate a relatively large apparent movement that is obviously erroneous. It is apparent that the survey technique used for these measurements is susceptible to errors, however, future surveys will be verified in the field to eliminate these, and re-surveyed where necessary.

Movement monument measurements in the vertical direction indicated a relatively large apparent movement upward during July 1994 and back down in August.

Although it is not possible to say conclusively at this time that the apparent movement indicated by the inclinometer is not movement of the dam embankment, it is believed that the inclinometer casing is moving independently of the embankment. A steel casing is grouted around the top of the inclinometer casing , around which a concrete pad is anchored approximately three feet below the top of the casing. The concrete pad is sloping in the downstream direction at the downstream edge of the crest, and it is believed that the weight of the concrete is pulling the casing in a downstream direction. Recent field inspections of the Dam A-4 and B-5 inclinometers found that the pads for those inclinometers lifted slightly above the ground surface, and that the tops of those casings could be moved an inch or more in any direction by pushing on it. Although the C-2 inclinometers do not exhibit such extreme conditions, it is likely that similar condition exist to some extent for the C-2 inclinometers as well. It is believed that the wet weather this spring probably caused some swelling of the soil, and that the subsequent drying of the soil this summer caused shrinkage of the soil under the concrete pad. It is believed that the movement indicated by the inclinometer is due to these factors, rather than movement of the dam embankment

itself. It is possible that the upper portion of the dam experienced some small movement due to the excessively wet conditions experienced this spring, which somewhat stabilized upon drying out, however, actual movement of the dam embankment of the amount indicated by the inclinometer in the upper ten feet would be expected to be indicated in the horizontal movement measurements for the movement monuments as well, which have not indicated any apparent real movement. The weight of the concrete pad, if it is not well supported, may cause additional deflection of the inclinometer casing, as well as the other factors discussed. Dam monitoring personnel are currently pursuing possible solutions to the problems with the inclinometer casings since actual dam movement may be difficult to differentiate from movement of the inclinometer casing caused by external factors.

It is unlikely that the entire dam embankment would experience a settlement of over a tenth of a foot and then begin to rebound upward, as indicated by the vertical movement measurements for the movement monuments, or that this amount of vertical movement indicating a slope failure would not be accompanied by noticeable movement in the horizontal direction measurements for the movement monuments. Survey notes for monument surveys were re-checked for possible errors and found to be accurate. Because of similar relatively large apparent vertical movement at Dams B-5 and A-4, monitoring personnel believe the off dam monument used as a benchmark for the survey is susceptible to movement and abandoned its use in September 1995. It is believed that the benchmark, a 2 1/2 inch diameter aluminum cap on a aluminum pipe 30 inches long encased in concrete, was at a higher elevation during the surveys in May, June, and July 1994 due to the wet spring conditions that caused expansion of the soil around the benchmark. All surveys are now based off of a new off-dam benchmark that is the same as the on-dam monuments that minimize effects of soil conditions (stainless steel rod driven to refusal, approximately twenty feet below ground surface, with greased fin to allow the immediate ground surface around rod to move without the monument moving).

Baselines will be established for both horizontal and vertical measurements from an average obtained from the year of monitoring, from which all future measurements will be based. Tolerances will also be established based on the data, and any measurements outside of the tolerance will be re-surveyed.

3.12.4.4 Displacement

The crack on the upstream edge of the crest found in May was monitored for changes weekly through May, and will now be monitored as part of spring and fall inspections since no significant movement has occurred, unless conditions warrant additional monitoring. The width of the crack has decreased so that it is currently barely discernible in most locations and some cracks are now present outside the areas initially staked. No vertical movement has occurred. A copy of the monitoring checklist is contained in Appendix C.

3.12.5 Recommended Actions

3.12.5.1 Priority Actions

1. Monitor crack in accordance with DIP. (RFOC)
2. Monitor pond elevation and piezometers in accordance with DIP and perform actions in accordance with the ERP, revise ERP as necessary. (USACE, SE)
3. Monitor movement monuments and inclinometers for movement in accordance with DIP and revise ERP to include actions related to this monitoring. (RFOC, WC)
4. Operate gate annually. (USACE, SE)
5. Inspect outlet conduit to ensure integrity intact. (RFOC)
6. Install gate on upstream end of outlet conduit to prevent pressurized conduit. (USACE, SE)
7. Remove excessive vegetation in outlet channel to allow proper inspection and prevent obstruction of flows. (FERC)
8. Repair crack. (RFOC)

3.12.5.2 Other Recommended Actions

1. Regrade entire crest to ensure proper drainage. (RFOC)
2. Control vegetation on upstream slope to allow for proper inspection and prevent excessive root growth from causing flow paths through the embankment. (FERC)
3. Place additional grass seed to provide thicker grass cover as necessary. (SE)

3.12.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include spring and fall inspections, and monitoring as appropriate. The pipe on the dam crest was removed in February 1996.

3.13 Landfill Dam

3.13.1 Dam Condition

The overall condition of this dam is questionable.

3.13.2 Field Observations

6/5/95 Inspection, Water Elevation 5914', 40.1% on 6/5/95

Wet areas were found at the toe and abutments with standing water in some locations. The lower areas are believed to have been caused by a combination of seepage from the dam along with ground water, and the upper areas caused by runoff. The areas were monitored initially, as discussed further below under Section 3.12.4.3, but are no longer present or monitored. Also see the discussions on pond elevations and piezometer monitoring for additional information.

The condition and integrity of the outlet conduit cannot be determined. A valve and blank flange are located at the downstream end and a valve is located at the upstream end. It is believed there is also a blank flange located on the upstream end. The water level was too high to allow inspection for this or of the intake structure. The valve on the upstream end of the outlet is probably inoperable due to a bent valve stem. Significant tire ruts were found on the crest up to 2" deep with standing water. The ruts have since been repaired but the crest needs further grading to ensure proper drainage.

Other items of lesser concern were noted during inspection. A minor erosion area was noted at the entrance to the concrete spillway along the South bank, as well as sloughing on both banks of the spillway channel downstream of the box culvert, as previously noted. There is no riprap cover on the lower portion of the upstream slope and a small scarp was found below the riprap line. Minor rodent holes were found in the downstream slope.

12/7/95 Inspection, Water Elevation 5913.7', 38.3% on 12/7/95

All previous findings were still found to be current. High grass on the downstream slope made inspection difficult. The deep tire ruts had been filled at the time of this inspection, however additional crest grading is still needed.

New findings included a scarp forming along the length of the upstream slope of the Sanitary Landfill Dam. The scarp is approximately two feet in depth with benching of the eroded material occurring below the water level. Additionally, smaller scarping and benching action was observed at various levels above the current level and below the level of the riprap covering the upper portion of the slope. Examination of previous photographs for the dam indicate the upstream slope was covered relatively uniformly with cobbles, which were overlain with riprap on the upper portion of the slope in 1991. The cobbles are no longer visible on the lower portion of the slope below the level of the riprap. It is believed that riprap placement operations may have loosened the outer shell material of the dam, a gravelly sand, which then slid down the slope, covering the cobble layer in a loose, uncompacted layer. Ensuing wave action when the water level was below the riprap level has caused further sliding and benching of the loose material. While it is not believed that the current scarping action is an imminent threat to the dam's overall stability, but rather a surficial movement of the embankment shell material, it is likely that the loosened shell material will continue to slide, particularly when the water levels are below the riprap covering. The

possibility of massive slides of shell material and riprap exists if shell material is eroded severely enough directly below the riprap level. Additionally, drawdown of the reservoir in the spring after the spring runoff has filled the reservoir may cause further sliding of the material, and drawdown rates may need to be adjusted to minimize the effects of the drawdown. The water in the reservoir has subsequently been lowered one and one-half feet in elevation to prevent further erosion of the large scarp area. However, a scarp is likely to occur at the current reservoir elevation. While filling of the reservoir to above the elevation of riprap protection would likely afford better protection against further scarping action, maintaining adequate reservoir capacity for spring runoff is also important, hence the decision was made to lower rather than increase the reservoir elevation.

3.13.3 Actions Performed in 1995

The deep tire ruts in the crest were repaired in the summer of 1995. Spring and fall inspections were conducted as discussed above and monitoring activities have been performed as listed below.

3.13.4 Monitoring Activities

3.13.4.1 Pond Elevation

Water elevations at the Landfill Pond are monitored weekly, and more frequently if heavy inflow is occurring. The Landfill Pond ranged between elevation 5910.5' (22.3%) and 5919.5' (85.7%) in 1995, and was at an average elevation of 5915.1' (47.3%). The pond was above 50% capacity for a combined time period of about four months. Historical pond elevation graphs indicate that the pond has been at higher capacities than this (90% in 1993) for an extended period of time.

3.13.4.2 Piezometers

There are two piezometers located in the dam, one in the crest and one at the downstream toe, which are read weekly (see piezometer graphs in Appendix D), were installed in 1992, and are screened through the entire embankment. Crest piezometer 47292 has shown a relatively small amount of change with the pond elevation, but does show some correlation. The piezometer did not exceed the previous historical high seen in 1993. Toe piezometer 47492 also showed some degree of correlation with the pond elevation, although it rose slightly during both springs prior to 1995. This spring, the piezometer rose to an elevation over three feet higher than previous highs, although the pond elevation did not exceed previous highs, nor was the pond held for a relatively extended period of time at a high level. Due to the wet spring and to indications of previous high elevations in the piezometer during the spring, it is believed that groundwater in the area was the primary cause for the relatively high piezometer elevation this spring. This does not infer that the elevated level in this piezometer is not a cause for concern since saturated areas were found at the toe of the dam, as discussed below.

3.13.4.3 Seepage/Wet Areas

The wet areas at both abutments found in May were monitored at least three times per week for about a month. See Appendix C for checklists. During this time the area and degree of wetness changed greatly depending on the amount of precipitation received. All standing water in the area was found to be clear. Field investigations revealed that in the higher areas only the surface soil was saturated, and therefore was not likely caused by seepage from the pond through the dam abutments. The saturated lower portions were believed to be mainly due to higher than normal ground water in the area from the wet spring, with some influence from the pond elevation. The pond has historically been at the elevations it was this spring, with wet areas found only one other time in the past during another relatively wet spring (1992). A high water elevation in the area this spring was indicated by the high water elevation of the toe piezometer. Monitoring of the areas with the checklists was discontinued at the end of May, however, visual inspections were still performed during piezometer monitoring. All areas are currently dry

3.13.5 Recommended Actions

3.13.5.1 Priority Actions

1. Monitor piezometers and pond elevation in accordance with DIP. (USACE)
2. Visually monitor scarp on upstream slope. (RFOC)

3.13.5.2 Other Recommended Actions

1. Make outlet works operational and operate annually. (USACE, SE)
2. Regrade crest to ensure proper drainage and place soil over box culvert. (USACE, SE)
3. Revise ERP for dams to include piezometer specific action levels and actions for the Landfill Dam. (RFOC)
4. Repair sloughs in spillway. (FERC)
5. Fill rodent holes to prevent possibility of direct flow through holes and excessive removal of soil from the dam embankment. (RFOC)

3.13.6 Actions Currently Funded in 1996

Actions funded for this dam in 1996 include spring and fall inspections, and monitoring as appropriate.

APPENDIX A - PHOTOGRAPHS OF NEW ITEMS OF CONCERN

Dam A-3 spillway erosion - May 1995

Dam C-1 spillway erosion - May 1995

APPENDIX B - DAM INSPECTION CHECKLISTS

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: A-1 DATE INSPECTED: 12/7/95

INSPECTORS: WOODS, FITZSIMMONS, ROBERTSON

CHECKLIST NUMBER ICD - _____

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?		X		
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
e.				DISTRESS ON SLOPE
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		HIGH GRASS, DIFFICULT INSPECTION
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?	X	X	X	WILLOW LOWER END
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?	X	X	X	WET AREA @ TOE
g. Rodent Holes?		X		
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		X	MINOR LT SIDE
b. Any obstructions?	X		X	MODERATE SIZE TREES IN RT SIDE
c. Are slopes sloughing?	X	X		NONE
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X	X		
b. Joint Problems?		X		LEAKAGE BELIEVED DUETO STOP LOG GROUT PLUG
c. Metal appurtenances problems?		X		SEDIMENT COVERING GATE, CANNOT INSPECT
6. OUTLET WORKS				
a. Corrosion of the conduit?	X		X	MINOR
b. Is the conduit misaligned?		X		
c. Any obstructions?	X		X	EXCESS VEG IN OUTLET CHNL
d. Valves unlocked/unsecured?	X			N/A
e. Valves inoperable?	X		X	GROUT PLUG
Rust?	X			N/A
Leakage?	X		X	SMALL GUSH LEAKING @ DS END
Not operated within last year?	X			N/A
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN	X	X		
a. Surface deterioration?				
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation	X	X		
a. Instrumentation Uncalibrated?				N/A
b. Instrumentation Damage?				

COMPLETED BY:

DK WOODS — NAME

[signature] — SIGNATURE

12/7/95 — DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: A-1 DATE INSPECTED: 6/5/95

INSPECTORS: MANGEOT, WOODS

CHECKLIST NUMBER ICD - _____

WATER EL 5826.2', 368 OW 6/6/95

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

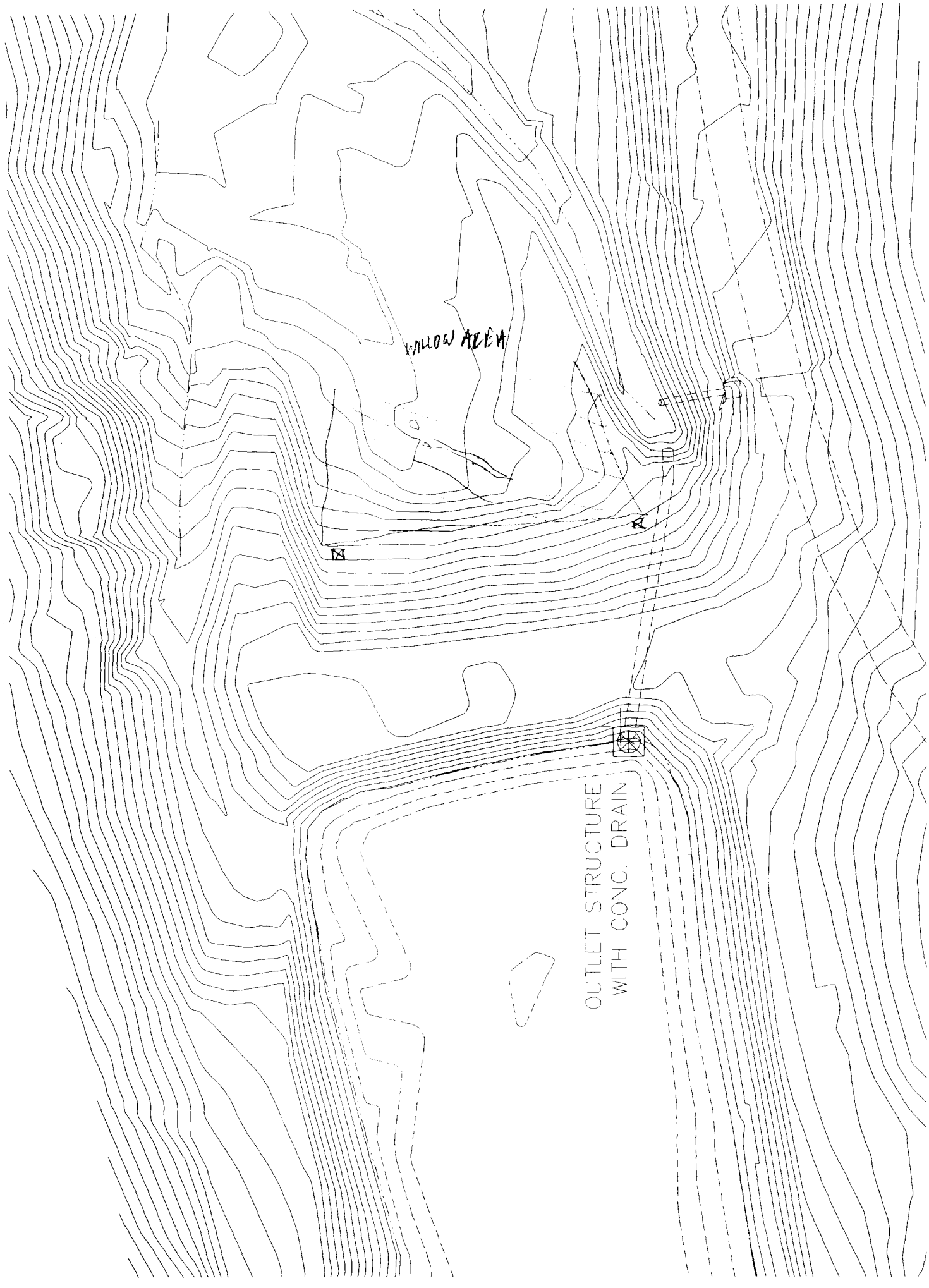
ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?		X		
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		DEBRIS ON SLOPE
b. Slope stability?	X			STABLE
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?	~	X		WILLOWS @ DOWNSTREAM TOE
d. Cracks?		X		
e. Slope stability?	X			STABLE
f. Seepage?		X		
g. Rodent Holes?	X		X	SOME NOT A PROBLEM
4. SPILLWAY				
a. Spillway deterioration or eroding?	X			FROM OVERFLOW DURING MAY STORM
b. Any obstructions?	X		X	TREES + DEBRIS
c. Are slopes sloughing?	X		X	HILLSIDE ABOVE SPILLWAY + TOE OF SPILLWAY
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				
b. Joint Problems?				CANNOT INSPECT
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?	X		X	
b. Is the conduit misaligned?		X		
c. Any obstructions?		X		
d. Are the associated valves locked?	X			
e. Are the valves operable?		X		
Rust?		X		
Leakage?	X			THROUGH GROUT PLUG
Operated within last year?		X		
7. ABUTMENT CONTACTS				
a. Any erosion?		X		SPARSE VEGETATION
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?	X		X	NOT A PROBLEM
8. STILLING BASIN				
a. Surface deterioration?		X		MISSING RIP RAP
b. Joint Problems?		X		END CRUNCHED
c. Joint Leakage?	X			
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?			NA	
b. Visual inspection of Piezo Well.			NA	

COMPLETED BY:

ERIC F. MANGEOT
NAME

SIGNATURE

6/5/95
DATE


WILLOW AREA
OUTLET STRUCTURE
WITH CONC. DRAIN

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: A-2 DATE INSPECTED: 12/7/95

INSPECTORS: WOODS, FITZSIMMONS, ROBERTSON

CHECKLIST NUMBER ICD - _____

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		YES	MINOR RUTS
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		APPARENT BULGING IS BELIEVED TO BE RIPRAP PLUGS
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		HIGH GRASS, DIFFICULT TO INSPECT
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?	X		YES	BOTTOM PART, WILLOWS
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?	X		YES	@ TOE, HEAVY VEG, IMPOSSIBLE TO INSPECT
g. Rodent Holes?	X		MINOR	
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		YES	TOE RUTS 4" DEEP, RCHD RABBIN BERM
b. Any obstructions?	X		YES	
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE W/ CONTROL HOUSE				
a. Concrete surface deterioration?		X		UNABLE TO INSPECT, CONTR SLIDE & ROD REMOVED
b. Joint Problems?		X	YES	LOOKING ON CREST, MINOR @ EMPT CONC JOINT
c. Metal appurtenances problems?		X		
6. OUTLET WORKS W/ CONTROL HOUSE				
a. Corrosion of the conduit?		X		
b. Is the conduit misaligned?		X		
c. Any obstructions?	X		X	SMALL TREES @ OUTFALL, DEBRIS IN PIPE
d. Valves unlocked/unsecured?		X		
e. Valves inoperable?	X			
Rust?	X			~~UNABLE TO INSPECT~~ MINOR
Leakage?	X			POSSIBLE, WATER IN BOX
Not operated within last year?	X			INOPERABLE
7. ABUTMENT CONTACTS				
a. Any erosion?	X	X	X	SLIGHT @ LT ABUT, @ SPILLWAY BERM
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN W/C + CONT				
a. Surface deterioration?		X		N/A
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?				N/A } NO RELEASES, RIPRAP SPARSE @ END OF
Eroding the embankment?				N/A } UNCONTROLLED OUTLET
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?				N/A
b. Instrumentation Damage?				

COMPLETED BY:

D L WOODS
NAME

SIGNATURE

12/7/95
DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: A-2 DATE INSPECTED: 6/13/95

INSPECTORS: D. WOODS, E. MANGCOT

CHECKLIST NUMBER ICD - _____ WATER EL, 5813.4', 56.8 ON 6/5/95

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

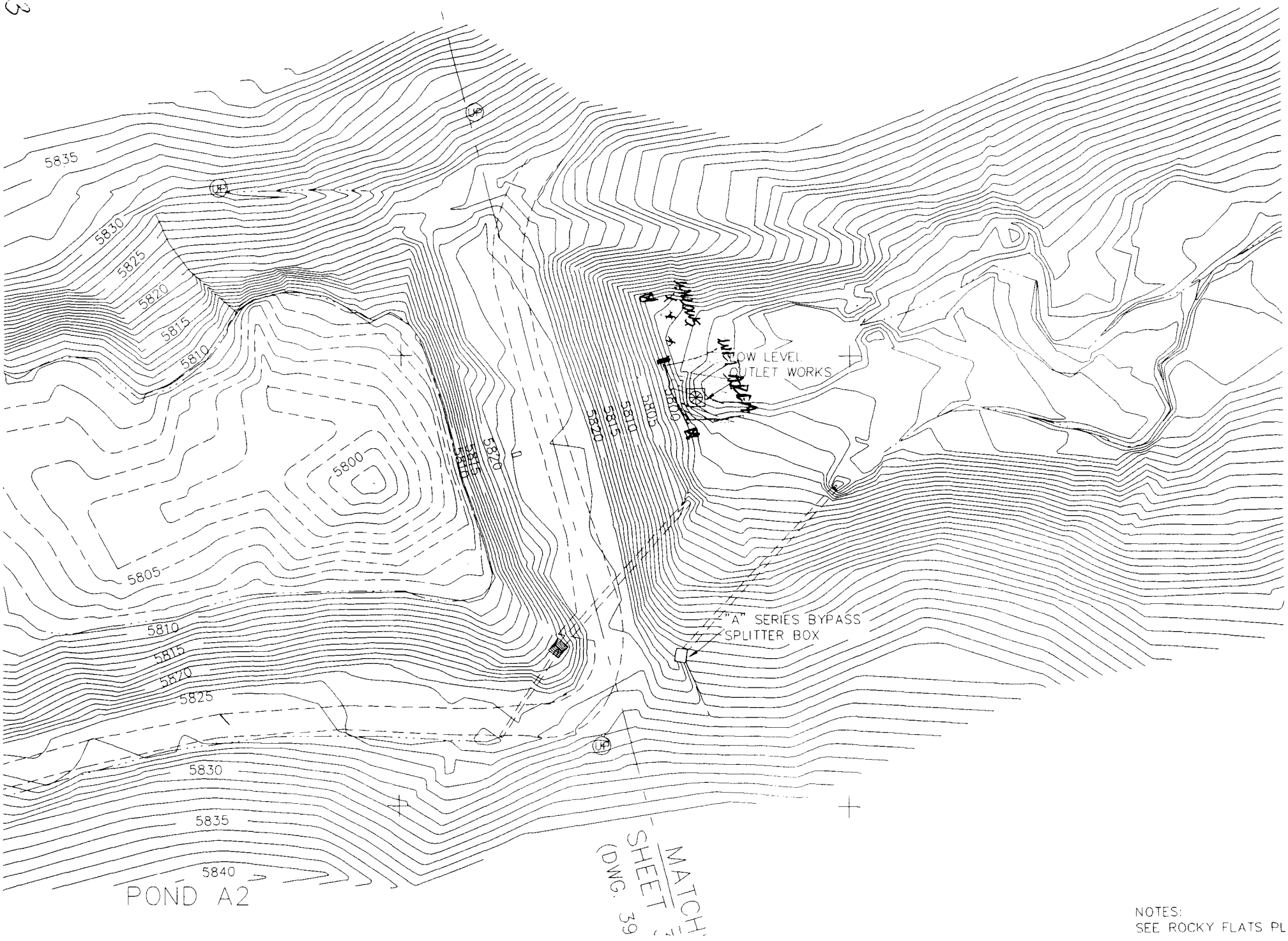
ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		RIPRAP SPARSE NEAR CREST ✓
b. Cracks, Ruts, or Puddles?	X		X	MINOR, SOME POT HOLES
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?	X		X	SPARSE NEAR CREST ✓
b. Slope unstable?			X	
c. Depressions or Buldges?			X	
d. Cracks with Displacement?			X	
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			
b. Any erosion or sink holes?		X		✓
c. Are trees growing on slopes?	X			SHRUBS NEAR TOE
d. Cracks?				
e. Slope unstable?		X		
f. Seepage?		X		
g. Rodent Holes?	X		X	MINOR ✓
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		X	SLIGHT FROM WATER TRANSFER, RUTTING, HOLES
b. Any obstructions?		X		
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X		X	SAME AS LAST TIME
b. Joint Problems?	X		X	[illegible]
c. Metal appurtenances problems?		X		
6. OUTLET WORKS				
a. Corrosion of the conduit?		X		
b. Is the conduit misaligned?		X		
c. Any obstructions?		X		
d. Are the associated valves locked?				
e. Are the valves operable?				
Rust?				POOLING WATER IN OUTLET BOX
Leakage?				
Operated within last year?				RIPRAP SPARSE AT EXIT OF UNCONTROLLED OUTF
7. ABUTMENT CONTACTS				
a. Any erosion?	X		X	FROM MAY STORM RT
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:		X		
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?				
b. Visual inspection of Piezo Well.				

COMPLETED BY:

ERIC MANGCOT — NAME

E. Mangcot — SIGNATURE

6/13/95 — DATE



NOTES:
SEE ROCKY FLATS PL

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: 12/7/95 ← DATE INSPECTED: → A-3

INSPECTORS: WOODS, FITZSIMMONS, ROBERTSON

CHECKLIST NUMBER ICD - _____ WATER EL. 5785.3 ?

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		YES	MINOR RUTS
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?	X		YES	SMALL SLOUGH, SOME RELATIVELY BARE AREAS
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
e.				~~DEC~~ EXCESS VEG
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?		X		
g. Rodent Holes?	X		YES	MINOR
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		YES	MAJOR EROSION AT CUTOFF WALL, 3'ct
b. Any obstructions?	X		YES	SMALL TREE AT CUTOFF WALL
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				UNABLE INSPECT, UNDER WATER
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?				UNABLE TO INSPECT LENGTH, END OK
b. Is the conduit misaligned?				
c. Any obstructions?	X		X	EXCESS VEG IN OUTLET CHANNEL
d. Valves unlocked/unsecured?		X		
e. Valves inoperable?		X		
Rust?		X		
Leakage?		X		
Not operated within last year?		X		
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?	X	~~X~~	YES	STAKED AREA, STORED FIELD SHEET
d. Slides?		X		
e. Rodent Holes?		X		
f. OTHER:	X		NO	DEEP GULCH LEFT & RIGHT ABUTMENTS WHERE ORIFICE DRAINS
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?		X		
b. Instrumentation Damage?		X		

COMPLETED BY:

DL WOODS — NAME

[signature] — SIGNATURE

12/7/95 — DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: A-3 DATE INSPECTED: 6/13/95

INSPECTORS: D. WOODS, E MANGEOT

CHECKLIST NUMBER ICD -

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

88.6 ELEVATION, 19,68

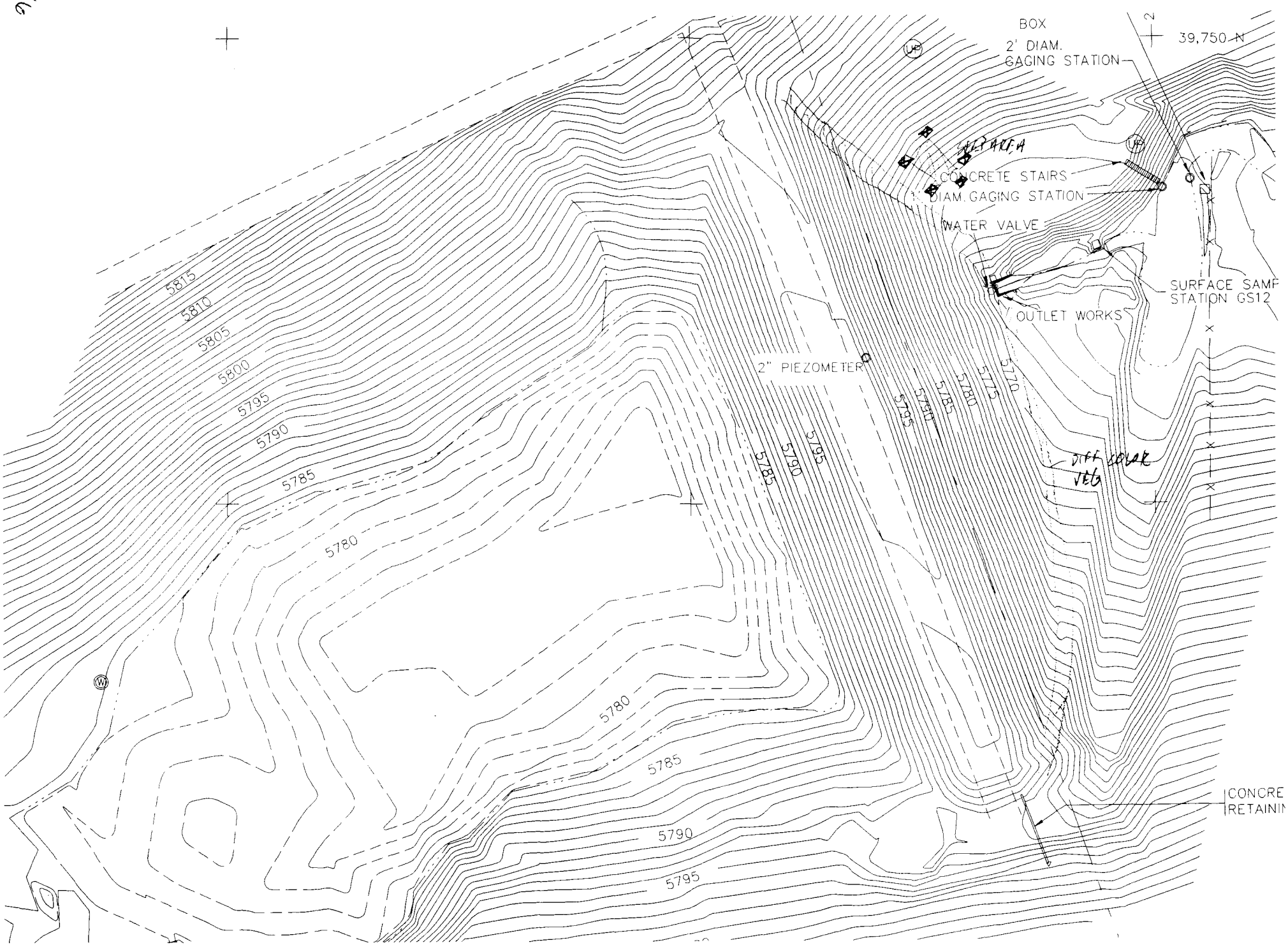
ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X			MODERATE RUTTING ON DAM CREST
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?	X		X	RIGHT SIDE, HEAVY VEG.
b. Slope unstable?		X		
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			NO PROBLEM, SPARSE IN SOME AREAS
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		HOWEVER, SM. TREE NEAR OUTLET (SHRUBS)
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?		X		
g. Rodent Holes?	X	X		MINOR.
4. SPILLWAY				
a. Spillway deterioration or eroding?	X			4' DEEP NEAR CUT-OFF WALL = 52' LENGTH x 15' WIDE
b. Any obstructions?				
c. Are slopes sloughing?				
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				NOT OBSERVED
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?		X		
b. Is the conduit misaligned?		X		
c. Any obstructions?		X		
d. Are the associated valves locked?	X			
e. Are the valves operable?	X			
Rust?		X		
Leakage?		X		
Operated within last year?	X			
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?	X	X	X	SLIGHTLY OFF ABUTMENT, OLD DEA
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:		X		
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?		X		
b. Visual inspection of Piezo Well.		X		

COMPLETED BY:

ERIC MANGEOT — NAME

SIGNATURE

6/13/95 — DATE


BOX
2' DIAM.
GAGING STATION
39,750 N
CONCRETE STAIRS
DIAM. GAGING STATION
WATER VALVE
OUTLET WORKS
SURFACE SAMP
STATION GS12
2" PIEZOMETER
5815
5810
5805
5800
5795
5790
5785
5780
CONCRE
RETAINI

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: A-4 DATE INSPECTED: 11/21/95

INSPECTORS: WOODS, FITZSIMMONS, LUCERO, ROBERTSON

CHECKLIST NUMBER ICD - _____ WATER EL. 5751.27 ON 11/22/95

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		X	RUTS + HOLES UP TO 3", POOR DRAINAGE ON MOST OF CREST
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		HIGH GRASS, DIFFICULT TO INSPECT, THEY TRIM IN CERTAIN PLACES (NEED GRASS)
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?	X		X	IN SLOUGH AREAS
e. Slope unstable?	X		PARTIAL	OLD SLOUGH + NEW SLOUGH AT SIDES BOTH SMALL + SUPERFICIAL X
f. Seepage?		X		
g. Rodent Holes?	X		X	SOME EVIDENCE, EXTENSIVE SMALL
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		YES	IN ROAD AT DS END OF
b. Any obstructions?		X		
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				UNABLE TO INSPECT, UNDER WATER
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?				UNABLE TO INSPECT LENGTH
b. Is the conduit misaligned?				
c. Any obstructions?	X		X	EXTENSIVE CATTAILS IN OUTLET CHANNEL
d. Valves unlocked/unsecured?	X		X	
e. Valves inoperable?				UNKNOWN
Rust?				
Leakage?				UNABLE TO TELL DUE TO WIER FOR DISCHARGE
Not operated within last year?	X		X	
7. ABUTMENT CONTACTS				
a. Any erosion?		X		SPARSE GRASS COVER ON LEFT ABUT
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?	X		X	
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?		X		SOIL SAT UNDER CONC PADS OF PZ/INCL PIPE
b. Instrumentation Damage?	X	X	NO	X

COMPLETED BY:

P.K. WOODS
NAME

SIGNATURE

11/21/95
DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: A-4 DATE INSPECTED: 6/13/95

INSPECTORS: D WOODS, E. MANGOT

CHECKLIST NUMBER ICD - _____

WATER EL. 5752.2,278
ON 6/15/95

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		X	RUTTING ON ROAD
c. Erosion or Sink Holes?		X		OLD SINK HOLE NEAR L. ABUTMENT
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope stability?		X		
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		OLD SLOUGH NEAR RT ABUTMENT
e. Slope stability?		X		HAY ON PORTION OF HILLSIDE PREVENTED FROM SEEING
f. Seepage?		X		
g. Rodent Holes?	X		X	
4. SPILLWAY				
a. Spillway deterioration or eroding?		X		
b. Any obstructions?		X		RUTTING ACROSS ROAD
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				NOT INSPECTABLE
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?		X		
b. Is the conduit misaligned?		X		
c. Any obstructions?		X		
d. Are the associated valves locked?		X		
e. Are the valves operable?		X		
Rust?				
Leakage?				
Operated within last year?		X		
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?	X		X	
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		CURRENTLY PUMPING
c. Joint Leakage?		X		
d. Is released water:		X		
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				OK
a. Instrumentation Calibrated?		X		
b. Visual inspection of Piezo Well.		X		

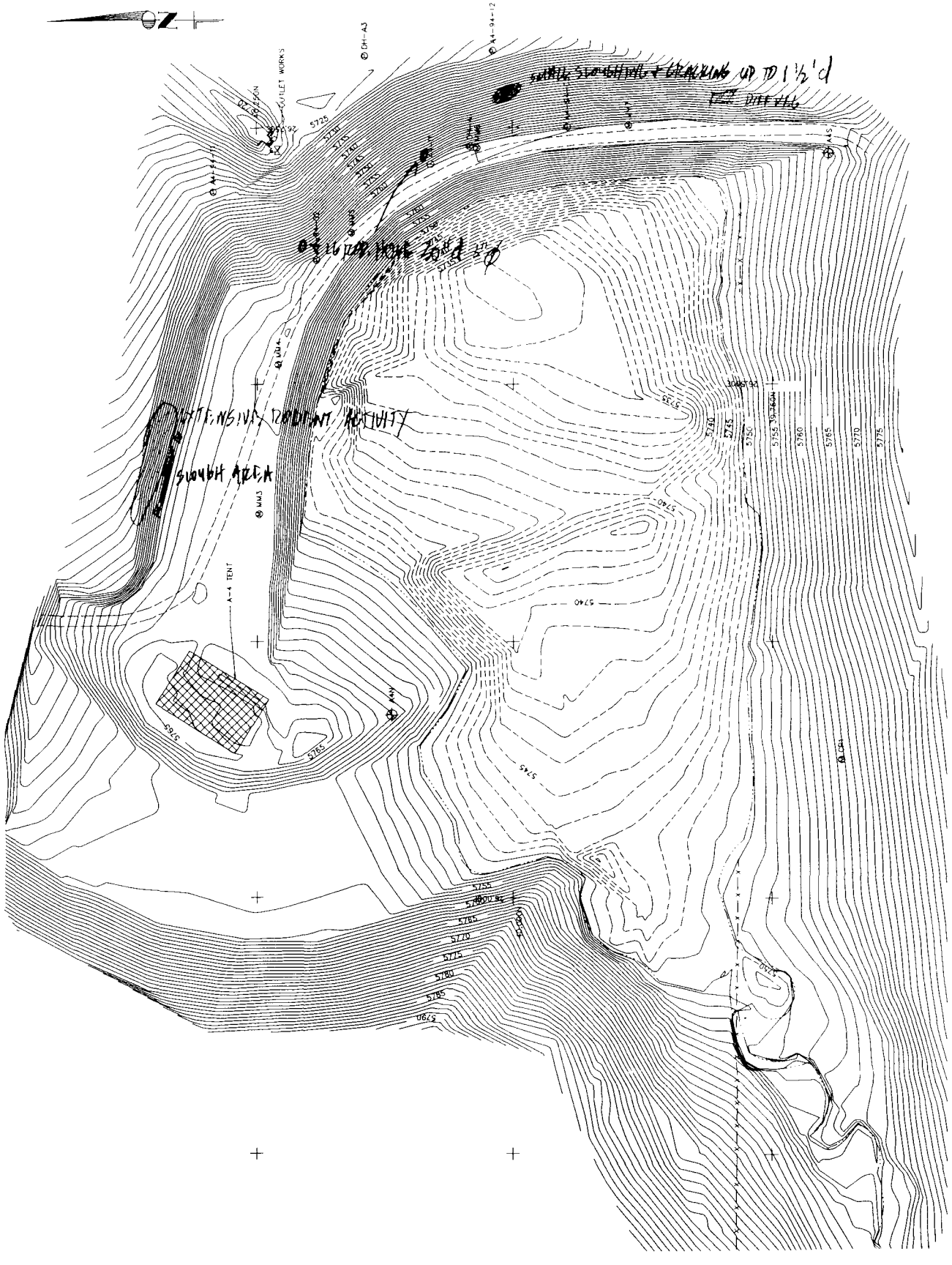
COMPLETED BY:

ERIC MANGOT — NAME

SIGNATURE

6/13/95 — DATE

48


OUTLET WORKS
DH-A3
A-4 TENT
MW3
MW4
MW5
5725
5730
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5740
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5755
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5780
5785
5790

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-1 DATE INSPECTED: 11/20/95

INSPECTORS: WOODS, FITZSIMMONS, LUCERO, ROBERTSON

CHECKLIST NUMBER ICD - ______ WATER EL 5877.8 @ ON 11/22/95

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		YES	[illegible] CRACK [illegible] NEAR PIEZO [illegible]
c. Erosion or Sink Holes?		X		
				VEG [illegible], WILLOWS
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?	X		YES	SEE MAP
e. Slope unstable?				UNKNOWN, CRACKING MAY INDICATE START OF INSTAB X
f. Seepage?	X		YES	RUST COLORED [illegible], NO FLOW, SEEPAGE TO TOE DRAIN CLOUDY, ALSO CLOUDY WTR OUT FURTHER IN POND
g. Rodent Holes?	X		YES	MINOR
4. SPILLWAY				
a. Spillway deterioration or eroding?		X		
b. Any obstructions?		X		
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X	X		N/A CONCRETE CLOSED, OK CONDITION
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?	X	X		
b. Is the conduit misaligned?				N/A CONCRETED CLOSED
c. Any obstructions?				
d. Valves unlocked/unsecured?				
e. Valves inoperable?				
Rust?				
Leakage?				
Not operated within last year?				
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?	X	X		
b. Joint Problems?				N/A
c. Joint Leakage?				
d. Is released water:				
Undercutting the outlet?				
Eroding the embankment?				
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?		X		
b. Instrumentation Damage?		X		

COMPLETED BY:

DK WOODS	[signature]	11/22/95
NAME	SIGNATURE	DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-1 DATE INSPECTED: 6/13/95

INSPECTORS: D. WOODS, E. MANGEOT

CHECKLIST NUMBER ICD - _____

WATER EL. 5480.2,668 ON 6/15/95
WATER LEVEL 0.3' ABOVE UNCONTROLLED OUTLET.

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

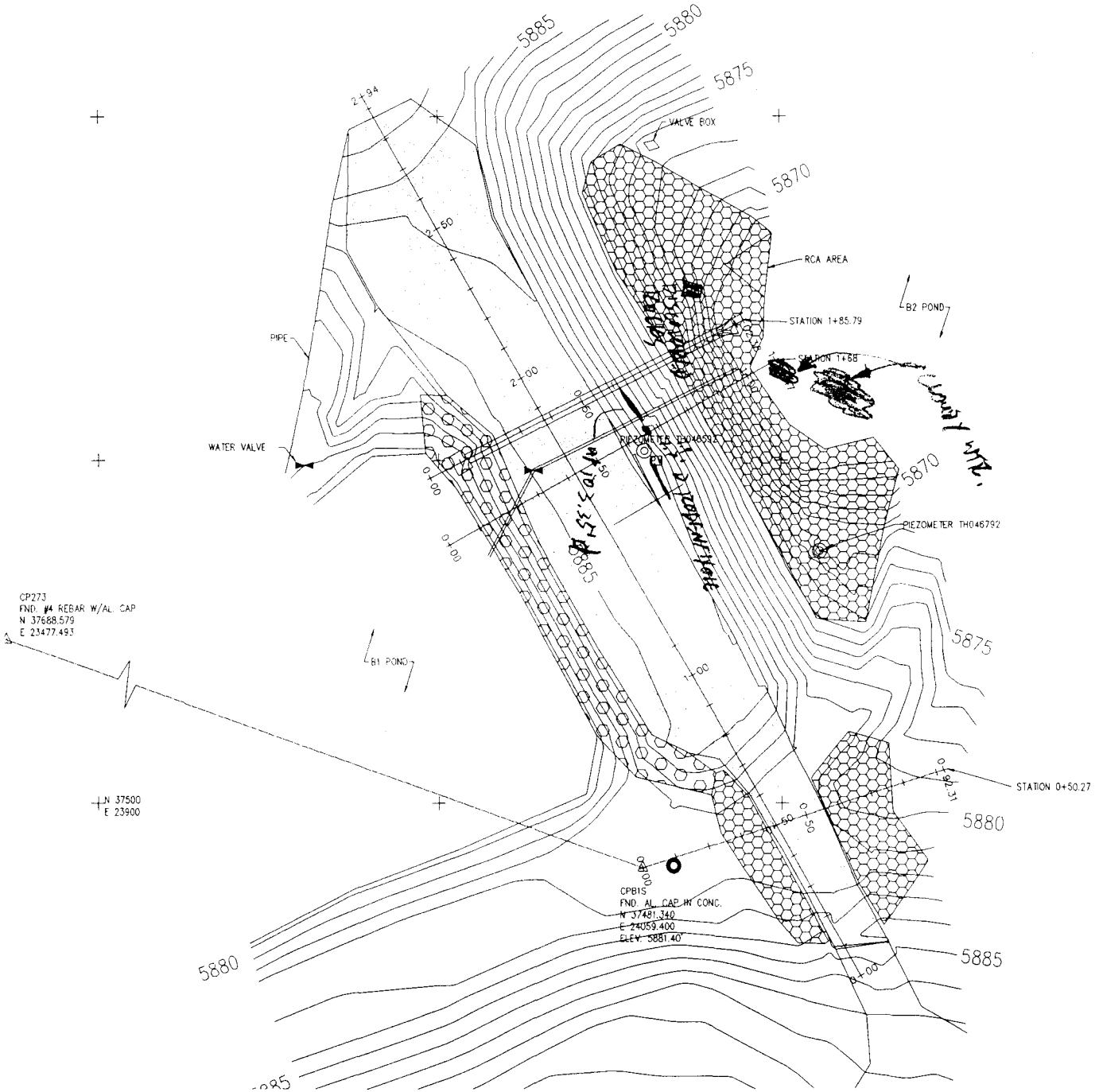
ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X			MINOR RUTTING
c. Erosion or Sink Holes?		X		CRACK NO CONDUIT VISIBLE
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		DESSICATION CRACKS IMPROVED
e. Slope unstable?		X		NO CLOUDING NEAR SLOP, B-2 H_2O LEVEL UP
f. Seepage?		X		
g. Rodent Holes?		X		
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		X	RUTTING ON ROAD CROSSING, SOME H_2O POOLING
b. Any obstructions?		X		
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				CEMENTED
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?				CEMENTED
b. Is the conduit misaligned?				
c. Any obstructions?				
d. Are the associated valves locked?				
e. Are the valves operable?				
Rust?				
Leakage?				
Operated within last year?				
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?	X		X	MINOR
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?		X		
b. Visual inspection of Piezo Well.		X		NO PROBLEMS

COMPLETED BY:

ERIC MANGEOT — NAME

E. J. Mangeot — SIGNATURE

6/13/95 — DATE


5885
5880
5875
5870
2+94
2+50
2+00
1+50
1+00
0+50
0+00
VALVE BOX
RCA AREA
STATION 1+85.79
B2 POND
PIPE
WATER VALVE
PIEZOMETER TH046792
PIEZOMETER TH046792
STATION 0+50.27
B1 POND
CP273
FND. #4 REBAR W/AL. CAP
N 37688.579
E 23477.493
N 37500
E 23900
CPB1S
FND. AL. CAP IN CONC.
N 37481.340
E 24059.400
ELEV. 5881.40'
N

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-2 DATE INSPECTED: 11/22/95

INSPECTORS: WEEDS, FITZSIMMONS, CULVER, ROBERTSON

CHECKLIST NUMBER ICD - _____

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		YES	SLIGHT RUTTING
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?				~~ICE DRAIN~~ IN DRAIN, UNABLE TO SEE FLOW UNDER INTAKE X
g. Rodent Holes?	X			
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		YES	RUTTING W/ SOME LOCALIZED EROSION (CHECK)
b. Any obstructions?	X		YES	CRATE, PIPES SLIGHT FLOW RESTRICTION, SOME END CONCRETE FALLING
c. Are slopes sloughing?		X		BUT TIRE RUTS + CHECKING
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?		X		
b. Joint Problems?	X		YES	BTWN PIPE + CONC
c. Metal appurtenances problems?		X		
6. OUTLET WORKS				
a. Corrosion of the conduit?	X		YES	@ US END, VISIBLE FLOW FR. HOLE IN BTM, CORROSION @ DS END
b. Is the conduit misaligned?		X		
c. Any obstructions?		X		
d. Valves unlocked/unsecured?		X		
e. Valves inoperable?				UNKNOWN
Rust?				"
Leakage?				"
Not operated within last year?	X			
				STEADY SEEPAGE FR OUTLET
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?	X			SHALLOW DESSICATION X
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?	X			N/A
b. Instrumentation Damage?	X			

COMPLETED BY:

DW Weeds — NAME

[signature] — SIGNATURE

11/22/95 — DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-2 DATE INSPECTED: 6/12/95

INSPECTORS: D. WOODS, E. MANGEOT

CHECKLIST NUMBER ICD - _____

≈2 ~~FT~~ ' FROM UNCONTROLLED OUTLET HOLE

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		CREST LOW IN CENTER, PROBABLY DOESN'T DRAIN
b. Cracks, Ruts, or Puddles?		X		~ MINOR
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?		X		
g. Rodent Holes?	X	X		1 LG. ONE NEAR CENTER OF DAM
4. SPILLWAY				
a. Spillway deterioration or eroding?	X			RUTTIN IN SPILLWAY
b. Any obstructions?	X			RIMP
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X		X	
b. Joint Problems?	X		X	LEAKING (SAME AS LAST TIME) SEEPAGE THROUGH BOTTOM OF FLUME
c. Metal appurtenances problems?		X		
6. OUTLET WORKS				
a. Corrosion of the conduit?	X		X	OLD PC
b. Is the conduit misaligned?		X		
c. Any obstructions?		X		
d. Are the associated valves locked?		X		
e. Are the valves operable?		X		
Rust?	X			
Leakage?	X			
Operated within last year?		?		
7. ABUTMENT CONTACTS				
a. Any erosion?		X		RUTS ON (L) SIDE, PONDING AREA @ TOE OF SPILLWAY
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:		X		
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?				
b. Visual inspection of Piezo Well.				

COMPLETED BY:

ERIC MANGEOT — NAME

SIGNATURE

6/15/95 — DATE


5885
5880
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5850
5855
DROP STRUCTURE
STP OU
-24,500 E

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-3 DATE INSPECTED: 10/21/95

INSPECTORS: WOODS, FITZSIMMONS, LUCERO, ROBERTSON

CHECKLIST NUMBER ICD - ~~WITTER FY, 5640 DKW~~

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?		X		
c. Erosion or Sink Holes?		X		
				INTERVY VEG, HARD TO INSPECT
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
				VEG, WILLOWS ON LEFT SIDE VIEW
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		GRASS HIGH, DIFFICULT & IMPOSSIBLE TO INSPECT
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?	X		YES	@ TOE, CATTAILS MAKE INSPECTION DIFFICULT
g. Rodent Holes?		X		
4. SPILLWAY				
a. Spillway deterioration or eroding?		X		
b. Any obstructions?	X		YES	TREES BEHIND ARE CAUSING SUBSTANTIAL LOSS OF FLOW AREA (YA)
c. Are slopes sloughing?		X		BERM ON LEFT END AS PREV NOTED
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X		YES	SOME MINOR SPL @ BTM
b. Joint Problems?	X		YES	MINOR @ CONC/CMP JOINT
c. Metal appurtenances problems?		X		
6. OUTLET WORKS				
a. Corrosion of the conduit?	X		YES	MINOR AS PREV NOTED
b. Is the conduit misaligned?	X		YES	SOME BULGING @ TOP
c. Any obstructions?	X		YES	SOME CATTAILS, TREES DS, MINOR
d. Valves unlocked/unsecured?	X			
e. Valves inoperable?		X		
Rust?		X		
Leakage?		X		
Not operated within last year?		X		
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?	N/A			
b. Joint Problems?	N/A			
c. Joint Leakage?	N/A			
d. Is released water:				
Undercutting the outlet?	X		YES	WORSENING, FLOWBACK UNDER FES LT SIDE CAUSING EMB, & 3' BACK X
Eroding the embankment?	X		YES	RT SIDE 2-1' DIA SIZE + UNDER, POSSIBLY WASHED OUT UNDER ENTIRE FES
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?		X		
b. Instrumentation Damage?		X		

COMPLETED BY:

DE WOODS — NAME

[signature] — SIGNATURE

10/21/95 — DATE

56

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-3 DATE INSPECTED: 6/13/95

INSPECTORS: D. WOODS, E MANGEOT

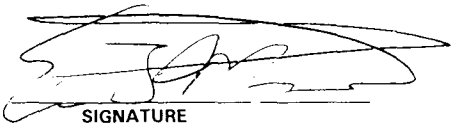
CHECKLIST NUMBER ICD - _____

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

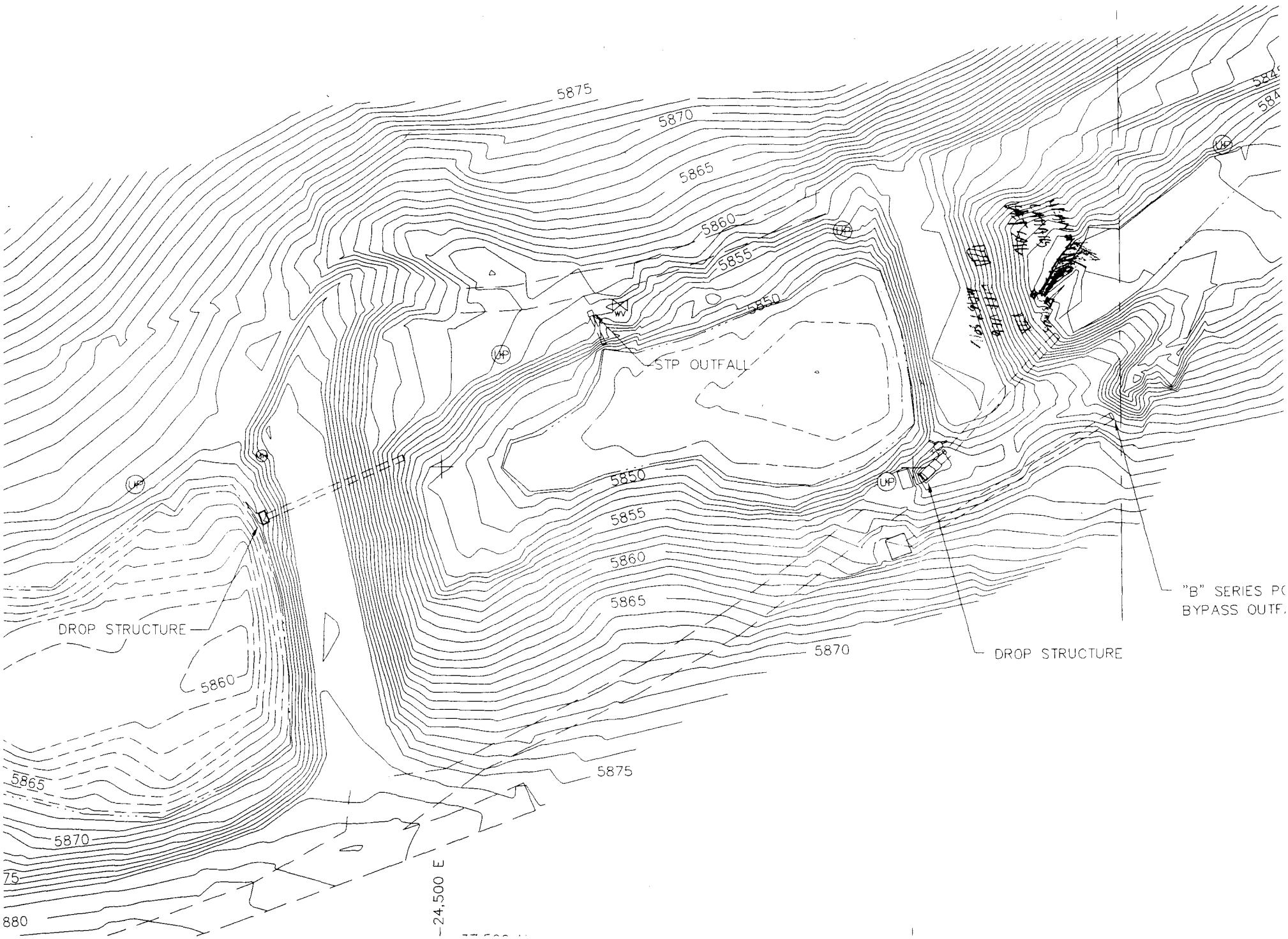
ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?		X		
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		~~TREES~~
b. Slope unstable?		X		
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			
b. Any erosion or sink holes?		X		ANIMAL TRACKS
c. Are trees growing on slopes?		X		
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?		X		
g. Rodent Holes?		X		
4. SPILLWAY				
a. Spillway deterioration or eroding?		X		
b. Any obstructions?	X		X	TREES
c. Are slopes sloughing?		X		SAME
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X		X	SAME
b. Joint Problems?	X		X	
c. Metal appurtenances problems?	X		X	
6. OUTLET WORKS				
a. Corrosion of the conduit?		X		
b. Is the conduit misaligned?		X		
c. Any obstructions?		X		
d. Are the associated valves locked?		X		
e. Are the valves operable?	X			
Rust?		X		
Leakage?		X		
Operated within last year?	X			
7. ABUTMENT CONTACTS				
a. Any erosion?	X		X	MINOR ECROSION
b. Cracks?			X	
c. Seepage?			X	
d. Slides?			X	
e. Rodent Holes?				
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:		X		
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?		X		NO PROBLEMS
b. Visual inspection of Piezo Well.	X			

COMPLETED BY:

ERIC MANGEOT — NAME

 — SIGNATURE

6/13/95 — DATE


5875
5870
5865
5860
5855
5850
STP OUTFALL
DROP STRUCTURE
DROP STRUCTURE
"B" SERIES PC
BYPASS OUTF
5860
5865
5870
5875
5865
5870
75
880
24,500 E

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-4 DATE INSPECTED: 10/21/95

INSPECTORS: WOODS, FITZSIMMONS, LUCERO, ROBERTSON

CHECKLIST NUMBER ICD - ______

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?		X		GRAVEL ON EA SIDE PREVENTS PROPER DRAINAGE
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		HIGH GRASS, DIFFICULT TO IMPOSSIBLE TO INSPECT
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?	X	X	YES	WILLOWS ON SIDES OF SW, SMALL X
d. Cracks?	X			SHORT CRACK 6" LONG, 2.4'd X
e. Slope unstable?		X		
f. Seepage?	X		YES	@ DS TOE 1ST 2 BLANK NOW IN PLACE, NO VIS SEEPAGE FROM —
g. Rodent Holes?	X			MINOR, SMALL X
4. SPILLWAY				
a. Spillway deterioration or eroding?	X			SOME CONC DET + CRACKING, EROSION AROUND WEIR US BOX WORSE ✝
b. Any obstructions?		X		MINOR DEBRIS IN STILLING BASIN
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE TO SPILLWAY				
a. Concrete surface deterioration?	X		X	DET + AROUND WEIR US OF CULV.
b. Joint Problems?		X		
c. Metal appurtenances problems?	N/A			N
6. OUTLET WORKS CONC BOX				
a. Corrosion of the conduit?	N/A			
b. Is the conduit misaligned?	A	X		
c. Any obstructions?	X			SOIL BUILDUP @ ENTRANCE
d. ~~Valves~~ GATE unlocked/unsecured?	X			
e. ~~Valves~~ GATE inoperable?		X		LT STEM SLIGHTLY BENT BUT STILL OPERABLE
Rust?		X		
Leakage?	N/A			SLIDEGATES
Not operated within last year?		X		
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN CONC CHUTE				
a. Surface deterioration?	X	X		MINOR SFC
b. Joint Problems?	X			GRASS GROWING OUT OF JTS
c. Joint Leakage?	X			UNKNOWN BUT ~~POSSIBLE~~ PROBABLE
d. Is released water:				
Undercutting the outlet?	X			~~[illegible]~~ ON LT SIDE, HOLE 3' 1½' DEEP 1' Ø ✱
Eroding the embankment?	X			
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?	X	X		N/A
b. Instrumentation Damage?	X	X		

FLOW 1.07 CFS

COMPLETED BY:

DK WOODS	[signature]	11/21/95
NAME	SIGNATURE	DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-4 DATE INSPECTED: 6/13/95

INSPECTORS: D. WOODS, E. MANGEOT

CHECKLIST NUMBER ICD - _____

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		X	MODERATE RUTTING
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?		X		
g. Rodent Holes?		X		
4. SPILLWAY				
a. Spillway deterioration or eroding?			X	
b. Any obstructions?			X	SAME AS LAST INSP.
c. Are slopes sloughing?			X	
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X		X	POTENTIAL FOR UNDERCUT AT ENT TO SPILLWAY
b. Joint Problems?	X		X	
c. Metal appurtenances problems?		X		
6. OUTLET WORKS				
a. Corrosion of the conduit?				
b. Is the conduit misaligned?				
c. Any obstructions?				
d. Are the associated valves locked?				
e. Are the valves operable?				
Rust?				
Leakage?				
Operated within last year?				
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?				
c. Seepage?				
d. Slides?				
e. Rodent Holes?				
8. STILLING BASIN				
a. Surface deterioration?	X		X	
b. Joint Problems?		X		
c. Joint Leakage?		X		SAME AS CAST INSP
d. Is released water:		X		
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?				
b. Visual inspection of Piezo Well.				

COMPLETED BY:

ERIC MANGEOT — NAME

[signature] — SIGNATURE

6/17/95 — DATE

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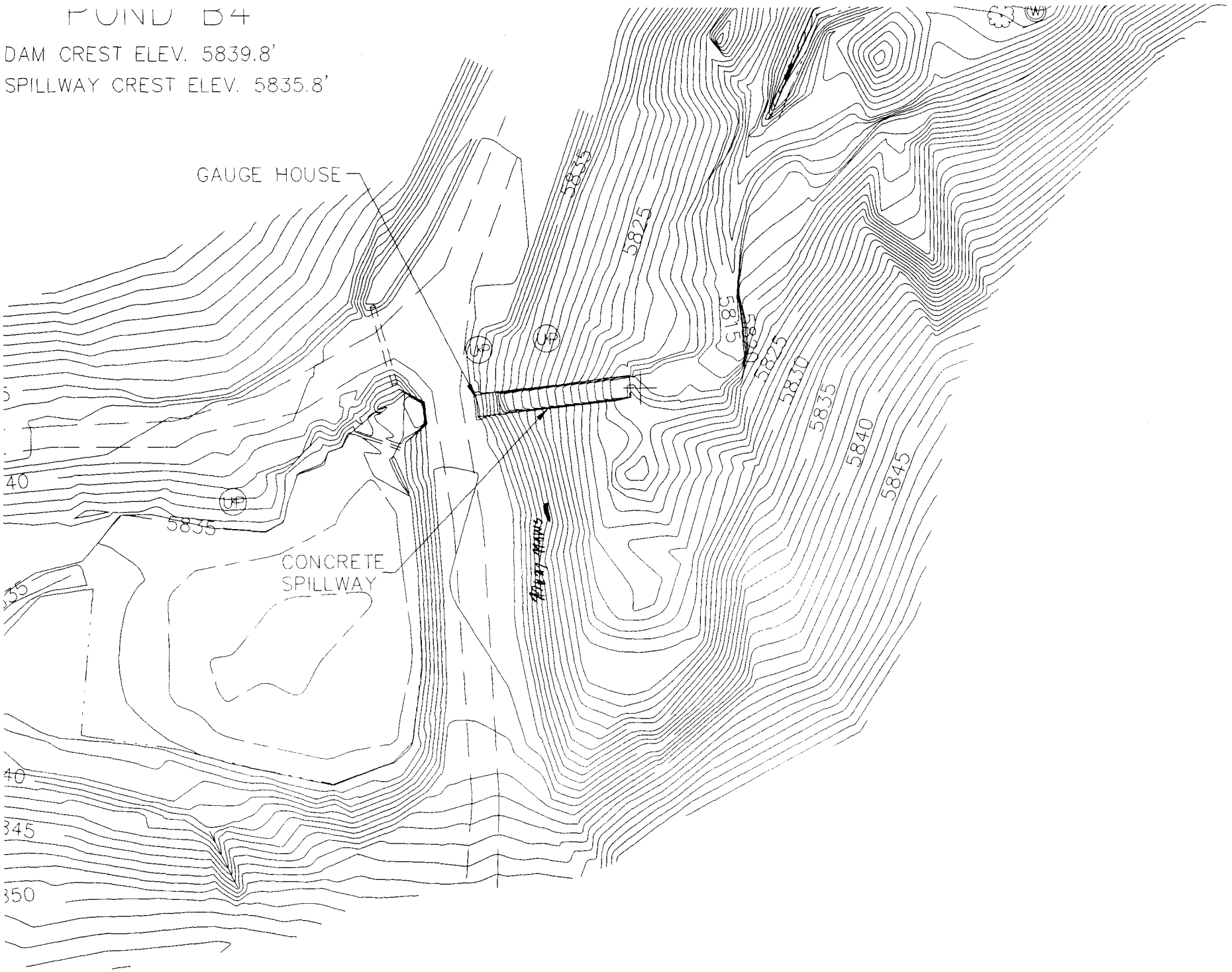
POND B4

DAM CREST ELEV. 5839.8'

SPILLWAY CREST ELEV. 5835.8'



RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B-5 DATE INSPECTED: 11/21/95

INSPECTORS: WOODS, FITZSIMMONS, LUCERO, ROBERTSON

CHECKLIST NUMBER ICD - _____ WATER EL. 5796.1, 8 ON 11/22/95

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		YES	TO PIPE, LITTLE DESSICATION CRACKING
c. Erosion or Sink Holes?		X		
				DIFFICULT TO INSPECT DUE TO HIGH GRASS, SPOT CHECKED
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		GRASS HIGH, DIFFICULT TO INSPECT X
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?	X		YES	AROUND SLOUGH AREA X
e. Slope unstable?	X		YES	SLOUGH AREA AND MUT BUT CRACKING ON SLOPE TO 1.5' D X
f. Seepage?		X		SEEP FROM HILLSIDE @ RT ABUT
g. Rodent Holes?	X		YES	EXTENSIVE IN SLOUGH AREA, VARIOUS OTHER AREAS
4. SPILLWAY				
a. Spillway deterioration or eroding?		X		
b. Any obstructions?	X		YES	PIPE RUNNING IN FLOW, MINOR OBSTRUCTION
c. Are slopes sloughing?		X		BUT LITTLE VISIBLE ON SLOPE
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X	X		UNABLE TO INSPECT, UNDER WATER
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?	X	X		UNABLE TO INSPECT LENGTH
b. Is the conduit misaligned?				" "
c. Any obstructions?	X			EXTENSIVE CATTAIL GROWTH IN OUTLET CHANNEL *
d. Valves unlocked/unsecured?	X			
e. Valves inoperable?		X		
Rust?		X		NONE APPARENT
Leakage?		X		
Not operated within last year?		X		OPERATED SPRING 95
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?		X		USGS SUSPECT UNDER ICEWEB PADS NOW
b. Instrumentation Damage?	X	X		

COMPLETED BY:

DL WOODS — NAME

[signature] — SIGNATURE

11/21/95 — DATE

62

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: B5 DATE INSPECTED: 6/1/95

INSPECTORS: J. FitzSimmons, D. Woods

CHECKLIST NUMBER ICD - _____ WATER EL 5790.8, 25.88, ON 6/1/95

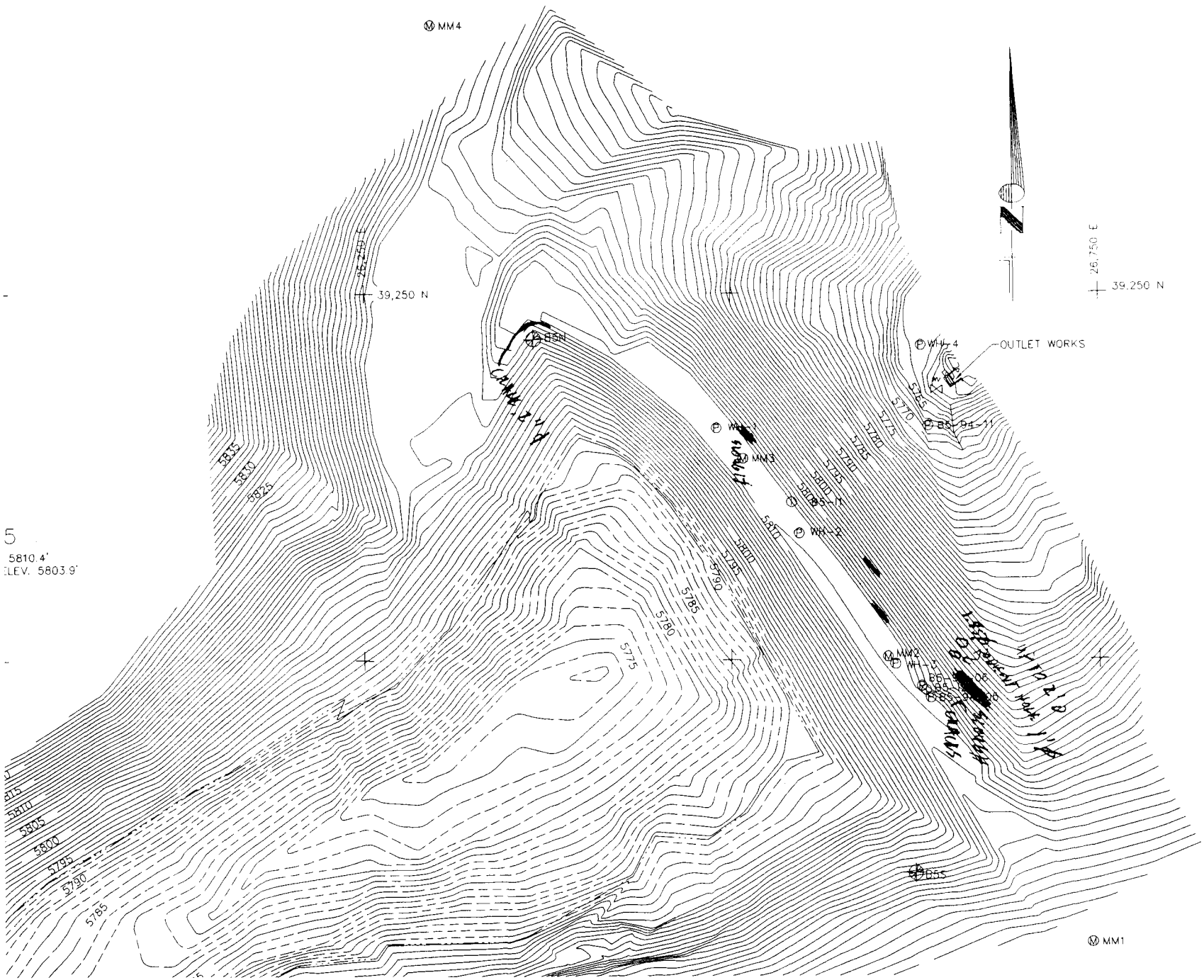
DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?				HAS SLID DROPPED BLACK PIPE
b. Cracks, Ruts, or Puddles?	X			VERY MOIST - POORLY DRAINED
c. Erosion or Sink Holes?				
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		?
b. Slope stability?	X			
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X	X		
b. Any erosion or sink holes?	X			SLUFF SMALL AREA RIGHT END
c. Are trees growing on slopes?		X		BOARDS ON SLOPE MID DAM
d. Cracks?		X		~~MUD~~ GRASS COVER MISSING AT
e. Slope stability?		X		TOE (ROAD BASE)
f. Seepage?		X		
g. Rodent Holes?		X		
4. SPILLWAY				
a. Spillway deterioration or eroding?		X		EXPOSED SOILS, HOSES, JERSEY BARRIERS
b. Any obstructions?	X			RIGHT ABUTMENT MISSING VEGETATION
c. Are slopes sloughing?		X		AND CRUST
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				NOT OBSERVED
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?				OK
b. Is the conduit misaligned?		X		3/4" ROAD BASE WASHED INTO OUTLET
c. Any obstructions?				CHANNEL IMPEDING FLOW FROM
d. Are the associated valves locked?		X		OUTLET — NOTICABLE FLOW FROM
e. Are the valves operable?	X			SPRING - VALVE OPEN 0.8 FCES
Rust?		X		
Leakage?		X		
Operated within last year?	X			
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:	+			
Undercutting the outlet?				
Eroding the embankment?				
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?				
b. Visual inspection of Piezo Well.				

DRUM USED AS FLOAT

COMPLETED BY:

JR FitzSimmons (NAME) JR Fitzsimmons (SIGNATURE) _____ 6/1/95 (DATE)


MM4
MM3
MM2
MM1
WH-1
WH-2
WH-4
OUTLET WORKS
B5N
B5S
B5-94-11
39,250 N
26,750 E
5810.4'
ELEV. 5803.9'

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: POND C-1 DATE INSPECTED: 10/31/95 & 11/20/95

INSPECTORS: D. WOODS, J. FITSIMMONS, V. LUCERO, A. ROBERTSON

CHECKLIST NUMBER ICD - ______

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		YES	SAME RUTS (1"), DESICATION CRACKS MINOR
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		
b. Any erosion or sink holes?	X		SINC	MINOR RILLS, SOFT SPOTS [illegible] SOME CRACKS X
c. Are trees growing on slopes?	X			
d. Cracks?	X		NC	SLOUGH LEFT ABUT 20" DEPTH 10' LENGTH X
e. Slope unstable?	UNKNOWN			POSSIBLE SLOUGH BTM SLOPE & WET TOE
f. Seepage?	X		PARTIAL	GRASS DIFF @ SLOPE, STANDING WTR @ TOE 1"D, VISIBLE WET. 1' W/TOE
g. Rodent Holes?		X		
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		YES	SAME AS PREV INSP, CONCRETE CRACKING @ END
b. Any obstructions?		X		
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X		YES	MINOR AROUND CMP CONCRETE JOINT
b. Joint Problems?	X		"	AS ABOVE, NO APPARENT LEAKAGE
c. Metal appurtenances problems?		X		
6. OUTLET WORKS				
a. Corrosion of the conduit?	X		X	MORE THAN PREV. INSP @ JOINT SEP
b. Is the conduit misaligned?	X		YES	
c. Any obstructions?	X		X	TREES RT SIDE
d. Valves unlocked/unsecured?	X		X	
e. Valves inoperable?	X		YES	BUTTERFLY INOPERABLE, MAIN OPERABLE
Rust?		X		
Leakage?		X		
Not operated within last year?		X		
7. ABUTMENT CONTACTS				
a. Any erosion?	X		X	CAN'T REALLY SEE OLD EROSION B/C AMT OF GRASS
b. Cracks?	X		PARTIAL	[illegible]
c. Seepage?		X		LT CRACK LEFT ABUT 10"D X
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN PES				
a. Surface deterioration?	N/A			
b. Joint Problems?	X		X	
c. Joint Leakage?	X		X	AT MISALIGNMENT
d. Is released water:				
Undercutting the outlet?	X		X	
Eroding the embankment?	X		X	AROUND LFT SIDE PES
9. Equipment/Monitoring/Piezometer and associated instrumentation	N/A			
a. Instrumentation Uncalibrated?				
b. Instrumentation Damage?				

COMPLETED BY:

D.K. WOODS	(signature)	11/20/95
NAME	SIGNATURE	DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: C-1 DATE INSPECTED: 5/30/95

INSPECTORS: J. FITZSIMMONS / D. WOODS

CHECKLIST NUMBER ICD - _____

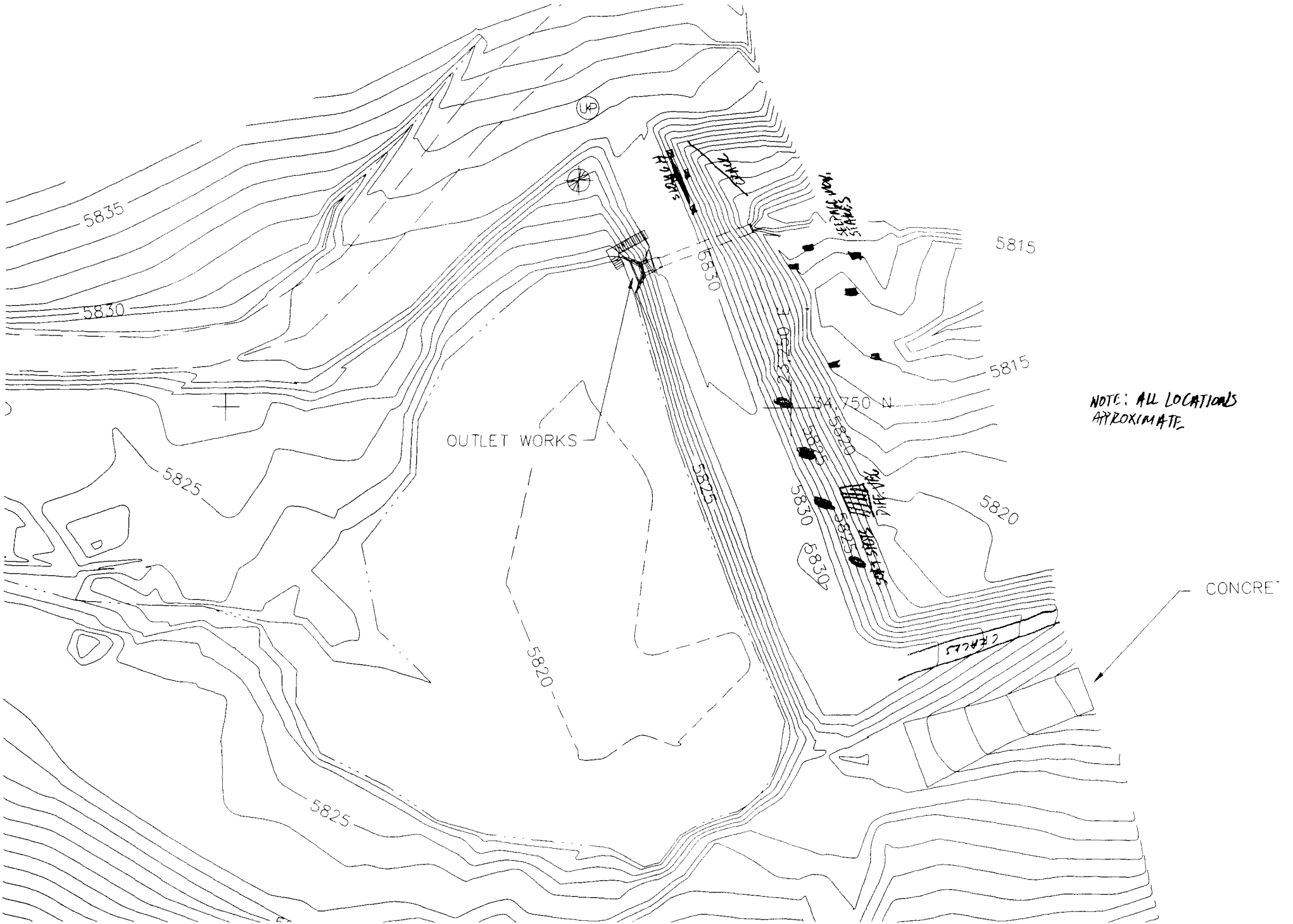
FLOW OUT 3.9 CFS

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?	X			SETTLEMENT
b. Cracks, Ruts, or Puddles?	X			RUTS 4" DEEP X 100' LONG
c. Erosion or Sink Holes?				PLANT PROTECTION SIGN POOR SHAPE
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		HIGH WATER LINE ~1' FROM CREST
b. Slope stability?		X		
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			RUN OFF FORMING SMALL CHANNEL NEAR RIGHT ABUTMENT
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?	X			2 TREES LARGE BUSHES
d. Cracks?		X		
e. Slope stability?	X			
f. Seepage?				SURFACE SOIL VERY MOIST
g. Rodent Holes?		X		STANDING WATER AT TOE
4. SPILLWAY				
a. Spillway deterioration or eroding?	X			EROSION AND RIPRAP AHEAD OF CONCRETE APRON SMALL TREE HAIR LINE CRACKS CONCRETE NO IMMEDIATE CONCERN (OVER)
b. Any obstructions?				
c. Are slopes sloughing?				
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?	X			RUST BOTTOM (OVER)
b. Is the conduit misaligned?	X			
c. Any obstructions?		X		
d. Are the associated valves locked?		X		
e. Are the valves operable?	X			SMALL BUTTERFLY STUCK OPEN
Rust?				
Leakage?				
Operated within last year?				
7. ABUTMENT CONTACTS				
a. Any erosion?	X			LEFT FOR SURFACE WATER RUNNING OF ROAD
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?	X			
b. Joint Problems?	X			RIGHT SIDE OF CHANNEL MISSING RIP RAP (3' HEADCUT)
c. Joint Leakage?	X			
d. Is released water:				
Undercutting the outlet?				
Eroding the embankment?				
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?				
b. Visual inspection of Piezo Well.				

COMPLETED BY:

JR FitzSimmons	JR FitzSimmons	5/30/95
NAME	SIGNATURE	DATE


5835
5830
5825
5820
5815
OUTLET WORKS
34.750 N
NOTE: ALL LOCATIONS APPROXIMATE
CONCRE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: C-2   DATE INSPECTED: 11/20/95

INSPECTORS: WOODS, FITZSIMMONS, LUCERO, ROBERTSON

CHECKLIST NUMBER ICD - ________   WATER EL. 5756, 8

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		NORMAL	NEW IN MIDDLE CREST LEFT END, OLD CRACK ALONG US SLOPE, BEYOND STAKES
c. Erosion or Sink Holes?		X		RUTS SLIGHTLY WORSE AS BEFORE
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope unstable?		X		
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?	X		NO	SEE ATTACHED MAP — X
e. Slope unstable?		X		
f. Seepage?		X		
g. Rodent Holes?	X		YES	MINOR
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		YES	RUTS, ~~[illegible]~~ TO 3", EXPOSING BARE SOIL
b. Any obstructions?	X		YES	SOME UNITS AS BEFORE, NOT SIGNIFICANT
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?	X	X	X	UNABLE TO INSPECT, UNDER WATER
b. Joint Problems?	X	X	X	
c. Metal appurtenances problems?	X	X	X	
6. OUTLET WORKS				
a. Corrosion of the conduit?	X	~~X~~		UNABLE TO INSPECT LENGTH
b. Is the conduit misaligned?	X	~~X~~		" " " "
c. Any obstructions?	X		YES	TREES UP TO 9" Ø IN OUTLET CHANNEL, WET GROUND IN OUT. CHANNEL *
d. Valves unlocked/unsecured?		X		
e. Valves inoperable?	X	X		UNKNOWN
Rust?	X	X		"
Leakage?		X		
Not operated within last year?	X			
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				N/A, NO RELEASES SINCE PREV. INSP
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?		X		[illegible] SUPPORT UNDERNEATH/INCLIN. COVER PAD ROCK — X
b. Instrumentation Damage?	X	~~X~~		↓

COMPLETED BY:

DK WOODS   [signature]   11/20/95

NAME   SIGNATURE   DATE

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RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: C-2 DATE INSPECTED: 5/30/95

INSPECTORS: J. FitzSimmons, D. Woods

CHECKLIST NUMBER ICD - _____

WATER EL 5760.8, 548, OW 5/30/95

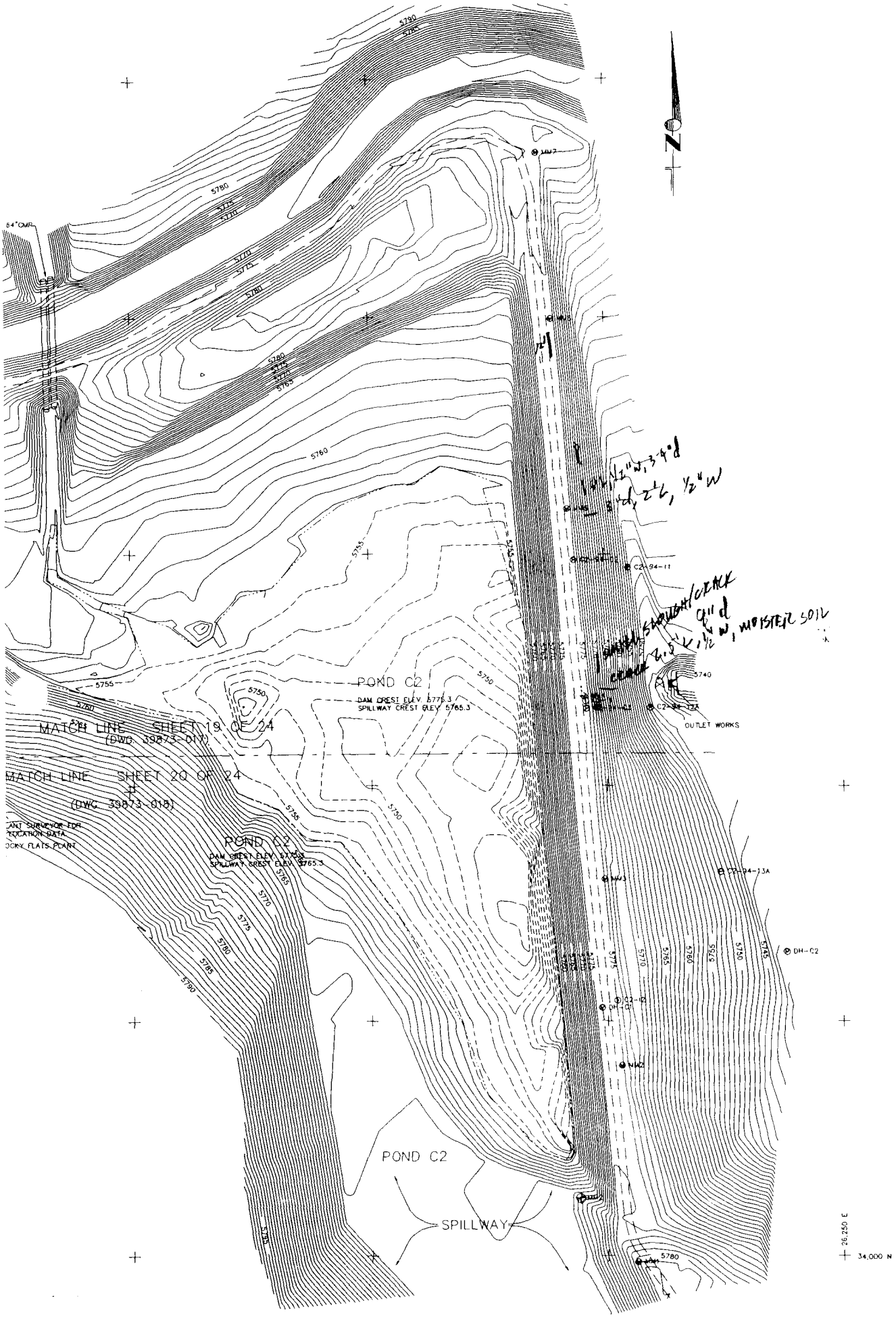
DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		X	RUTS FROM DISK, UP TO ±3" ALONG LENGTH, 3" @ 230', 1" REST
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		
b. Slope stability?		X		
c. Depressions or Buldges?		X		
d. Cracks with Displacement?	X	X		LONGITUDAL CRACK RIGHT END 30' LONG 1/4" CRACK
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	Y			
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		Y		
e. Slope stability?				
f. Seepage?				
g. Rodent Holes?				
4. SPILLWAY				
a. Spillway deterioration or eroding?		X		ROAD CROSSING BEAR SOIL, WILL ERODE GAC LINKS
b. Any obstructions?	X			
c. Are slopes sloughing?		X		
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				
b. Joint Problems?				NO OBSERVED
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?		X		
b. Is the conduit misaligned?		X		
c. Any obstructions?		X		
d. Are the associated valves locked?				
e. Are the valves operable?				
Rust?				
Leakage?				
Operated within last year?				
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?				
b. Joint Problems?				
c. Joint Leakage?				
d. Is released water:				
Undercutting the outlet?				
Eroding the embankment?				
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?				
b. Visual inspection of Piezo Well.				

COMPLETED BY:

JF _____ _____ _____

NAME SIGNATURE DATE


N
POND C2
DAM CREST ELEV. 5775.3
SPILLWAY CREST ELEV. 5765.3
MATCH LINE SHEET 19 OF 24
(DWG 33873-017)
MATCH LINE SHEET 20 OF 24
(DWG 33873-018)
POND C2
DAM CREST ELEV. 5775.3
SPILLWAY CREST ELEV. 5765.3
POND C2
SPILLWAY
OUTLET WORKS
C2-94-11
C2-94-12A
C2-94-13A
DH-C2
MW2
MW3
26,250 E
34,000 N

70

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: LANDFILL DATE INSPECTED: 12/7/95

INSPECTORS: WOODS, FITZSIMMENS, ROBERTSON

CHECKLIST NUMBER ICD - _____ WATER EL. 5913.7, 8 CM 12/7/95

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	Y		YES	MINOR RUTS
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?	X		YES	FOR LOWERMOST TOP PART OF SLOPE, ONLY
b. Slope unstable?	X		NO	SLOUGHING IS WITHIN LIMITS ≈ 2'-4", MAY WORSEN
c. Depressions or Bulges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Inadequate grass cover?		X		HIGH EW, DIFFICULT TO INSPECT
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		
e. Slope unstable?		X		
f. Seepage?		X		
g. Rodent Holes?	X		X	MINOR
4. SPILLWAY				
a. Spillway deterioration or eroding?		X		
b. Any obstructions?		X		
c. Are slopes sloughing?	X	X	YES	AT SIDES OF CONC. BOX CULV.
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				UNABLE TO INSPECT, UNDERWATER
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?				UNABLE TO INSPECT LENGTH
b. Is the conduit misaligned?				
c. Any obstructions?		X		
d. Valves unlocked/unsecured?				
e. Valves inoperable?	X		X	RIGHT SIDE IN
Rust?				UNABLE TO INSPECT
Leakage?		X		
Not operated within last year?	X		X	
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?		X		
d. Slides?		X		
e. Rodent Holes?		X		
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation				
a. Instrumentation Uncalibrated?		X		
b. Instrumentation Damage?		X		

COMPLETED BY:

DK WOODS — NAME

[signature] — SIGNATURE

12/7/95 — DATE

RFETS DAM INSPECTION CHECKLIST

NAME OF DAM: LANDFILL DATE INSPECTED: 6/5/95

INSPECTORS: D. WOODS, E. MANGEOT

CHECKLIST NUMBER ICD - _____ ENV. 25914, 8

DIRECTIONS: Mark an "X" in the YES column if a new item of concern is noted, otherwise mark an "X" in the NO column. If the problem has been noted before, mark an "X" in the OLD ITEM column. If an item does not apply, write "NA" in the REMARKS column.

ITEM	YES	NO	OLD ITEM	REMARKS
1. CREST				
a. Settlement or misalignment?		X		
b. Cracks, Ruts, or Puddles?	X		X	RUTS UP TO 2", STANDING H_2O
c. Erosion or Sink Holes?		X		
2. UPSTREAM SLOPE				
a. Riprap Missing, Sparse, Displaced?		X		ERR RAP CCOVER @ 3RD STEM + ABOVE ONLY
b. Slope stability?	X			OK, BUT SMALL SLUMP BELOW RR LINE
c. Depressions or Buldges?		X		
d. Cracks with Displacement?		X		
3. DOWNSTREAM SLOPE				
a. Adequate grass cover?	X			
b. Any erosion or sink holes?		X		
c. Are trees growing on slopes?		X		
d. Cracks?		X		
e. Slope stability?	X			STABLE
f. Seepage?		X		VERY LOCAL PUDDLE, WET W/ SMC STANDING H_2O
g. Rodent Holes?	X		X	SOME, NOT CONSIDERED.
4. SPILLWAY				
a. Spillway deterioration or eroding?	X		X	EROSION ON R ABUT 48 CULVERT, MINOR CRACKING CULVERT
b. Any obstructions?		X		
c. Are slopes sloughing?	X		X	
5. INTAKE STRUCTURE				
a. Concrete surface deterioration?				UNABLE TO INSPECT
b. Joint Problems?				
c. Metal appurtenances problems?				
6. OUTLET WORKS				
a. Corrosion of the conduit?				
b. Is the conduit misaligned?				
c. Any obstructions?				
d. Are the associated valves locked?				
e. Are the valves operable?		X	X	BENT STEM, STRAIGHT AFTER 3RD SUPPORT DOWN
Rust?				
Leakage?				
Operated within last year?				
7. ABUTMENT CONTACTS				
a. Any erosion?		X		
b. Cracks?		X		
c. Seepage?	X			REFER TO SEEPAGE MONITORING SHEETS (BOTH)
d. Slides?		X		
e. Rodent Holes?		X		SMALL SMALL, NOT A PROBLEM
8. STILLING BASIN				
a. Surface deterioration?		X		
b. Joint Problems?		X		
c. Joint Leakage?		X		
d. Is released water:				
Undercutting the outlet?		X		
Eroding the embankment?		X		
9. Equipment/Monitoring/Piezometer and associated instrumentation.				
a. Instrumentation Calibrated?		X		
b. Visual inspection of Piezo Well.		X		

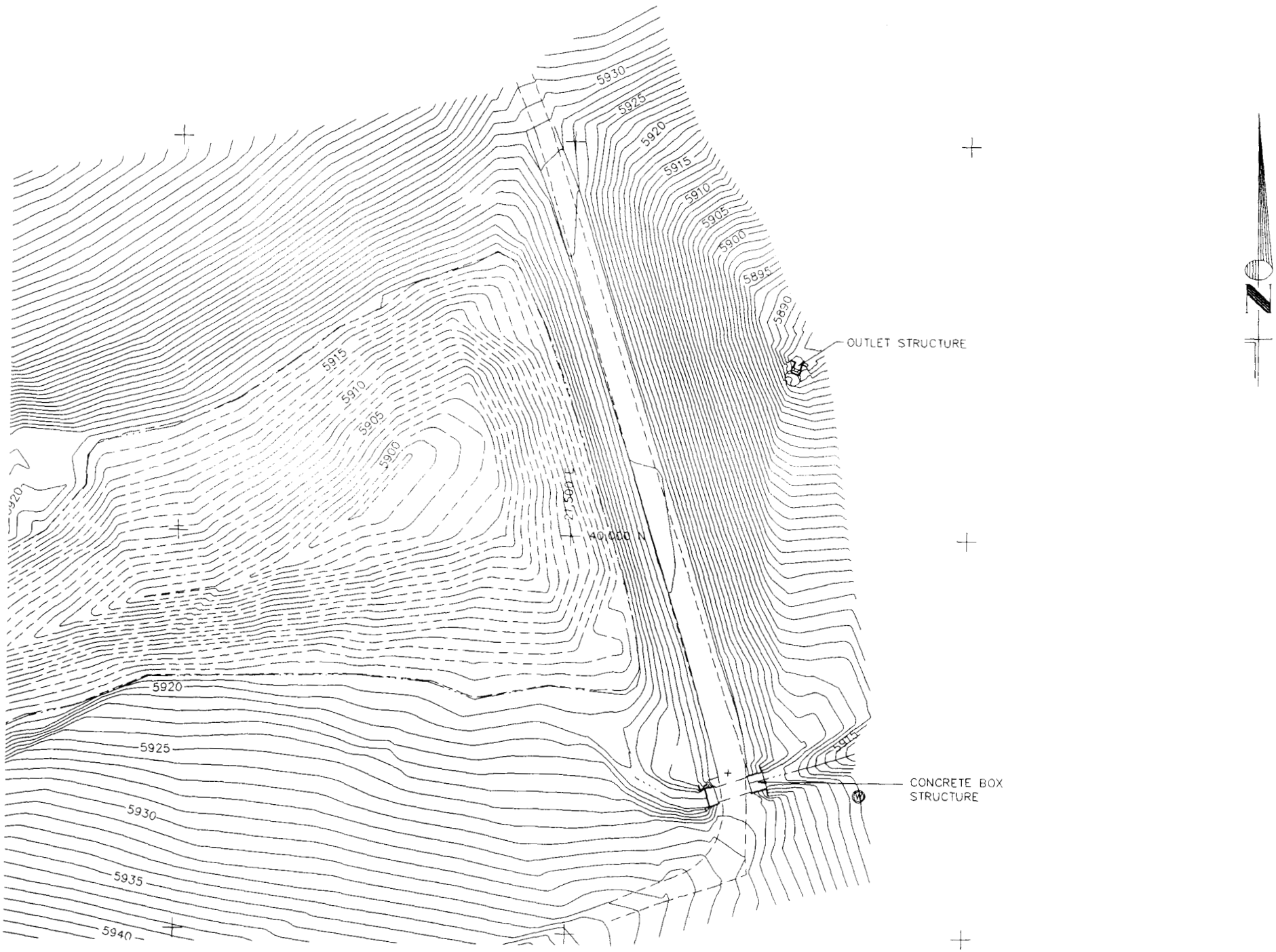
COMPLETED BY:

ERIC MANGEOT — NAME

SIGNATURE

6/5/95 — DATE

72


5930
5925
5920
5915
5910
5905
5900
5895
5890
OUTLET STRUCTURE
5915
5910
5905
5900
5920
27,500 E
40,000 N
5920
5925
5930
5935
5940
5915
CONCRETE BOX
STRUCTURE
N

APPENDIX C - DISPLACEMENT AND SEEPAGE MONITORING FIELD SHEETS

SC

SEEPAGE MONITORING FIELD SHEET

Dam: A-1

Location of Wet Area and Markers or Drain (Locate on Map): WET AREA @ DS TOE

Drain: _____ Concentrated Flow: _____ Wet Area: X

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In		Increase + Decrease - No Change NC	Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length	Width			
12/7/95		MOIST SOIL ONLY	N/A		X	X				1'	10'	-	DKW	4" STAKES U/S END

L
6

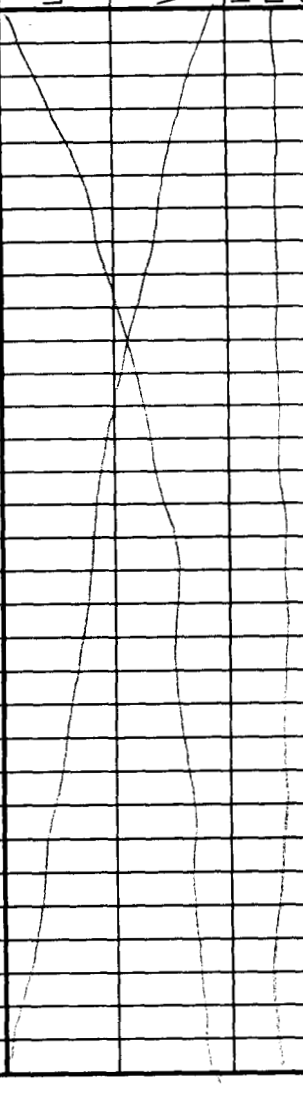
SEEPAGE MON ORING FIELD SHEET

Dam: 17-1

Location of Wet Area and Markers or Drain (Locate on Map): LEAKAGE FROM OUTLET CONDUIT

Drain: _____ Concentrated Flow: X Wet Area: _____

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In			Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length	Width	Increase + Decrease - No Change NC		
12/7/95		TRICKLE	W/H		X	X							DKW	



LL

SEEPAGE MONITORING FIELD SHEET

Dam: A-2

Location of Wet Area and Markers or Drain (Locate on Map): DS TOE

Drain: _____ Concentrated Flow: _____ Wet Area: X

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In		Increase + Decrease - No Change NC	Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length	Width			
12/7/95		STANDING WATER @ TOE (4") NO VIS FLOW	—		X	X				40'	(30' TO WILLOW)	—	DKW	SET STAKES @ TOE DS END

SEEPAGE MON[illegible]RING FIELD SHEET

Dam: A-3

Location of Wet Area and Markers or Drain (Locate on Map): SET WFF CREEK C LEFT ABUT, [redacted] DKW

Drain: N/A Concentrated Flow: _____ Wet Area: X

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In		Increase + Decrease - No Change NC	Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length	Width			
12/7/95		STANDING WITH SOME AREAS	1		X	X				40	20	—	DKW	SET STAKES

SEEPAGE MON' ORING FIELD SHEET

Dam: A-3

Location of Wet Area and Markers or Drain (Locate on Map): JOE DRAIN OUTLETS

Drain: X Concentrated Flow: _____ Wet Area: _____

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In		Increase + Decrease - No Change NC	Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length	Width			
12/7/95		NO VIS. FLOW, MOIST SOIL	—		X	X				—	—	—	DKW	CLEARED SOME SOIL FROM PIPES, NEED FURTHER CLEARING

DISPLACEMENT MONITORING F'~' D SHEET

Dam: A-9

Location of Displacement and Markers (Locate on Map): LEFT DS SLOPE

Embankment: X Concrete: ______ Slough: X

Longitudinal: ______ Transverse: ______

Date	Pond Elevation	Crack/Slough		1. Horizontal		2. Length		3. Vertical		Observers Initials	Comments
		Width	Length	X Measurement	Movement (- Widening)	Y1 Increase + Decrease -	Y2 Increase + Decrease -	Z Measurement	Movement (- Downward)		
10/21/95		1'	19'	STAKES EACH	W/STRING	—	—				SET STAKES @ EA END W/STRING, [illegible]

1. + or - movement direction indicates horizontal movement, across the displacement, of downstream or right marker with respect to upstream or left marker
2. + or - indicates an increase or decrease of length of displacement, based on marked ends, where Y1 is the upstream or left marker and Y2 is the downstream or right marker

   All horizontal measurements determined from center of marker unless otherwise noted
3. + or - movement indicates vertical movement, across the displacement, of the downstream or right marker with respect to the upstream or left marker

   All vertical measurements determined from top of markers using carpenters level unless otherwise noted

DISPLACEMENT MONITORING F' ' D SHEET

Dam: B-1

Location of Displacement and Markers (Locate on Map): _____

Embankment: X Concrete: _____

Longitudinal: X Transverse: _____ Slough: _____

Date	Pond Elevation	Crack/Slough		1. Horizontal		2. Length		3. Vertical		Observers Initials	Comments
		Width	Length	X Measurement	Movement (- Widening)	Y1 Increase + Decrease -	Y2 Increase + Decrease -	Z Measurement	Movement (- Downward)		
11/20/95		1½"	9'	23" CUTS.	-	-	-	LEVEL	-	DKW	SEE SKETCH, UP TO 3.3' D

1. + or - movement direction indicates horizontal movement, across the displacement, of downstream or right marker with respect to upstream or left marker

2. + or - indicates an increase or decrease of length of displacement, based on marked ends, where Y1 is the upstream or left marker and Y2 is the downstream or right marker

All horizontal measurements determined from center of marker unless otherwise noted

3. + or - movement indicates vertical movement, across the displacement, of the downstream or right marker with respect to the upstream or left marker

All vertical measurements determined from top of markers using carpenters level unless otherwise noted

SEEPAGE MON[illegible]RING FIELD SHEET

Dam: B-1

Location of Wet Area and Markers or Drain (Locate on Map): TOE DRAIN & AREA ≈ 10' OUT IN B-2 POND

Drain: X Concentrated Flow: _____ Wet Area: _____

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In				Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length (approx)	Width	Increase + Decrease - No Change NC			
11/20/95		UNDER WATER, SLIGHTLY MUDDY WATER			X			X		TOE DRAIN 10'	1' 6'	—		DLW	CLOUDY WATER @ TOE DRAIN & ABOUT 10' OUT FROM TOE IN POND

SEEPAGE MON[illegible]RING FIELD SHEET

Dam: B-2

Location of Wet Area and Markers or Drain (Locate on Map): HOLE IN CMP OUTLET CONDUIT

Drain: _____ Concentrated Flow: X Wet Area: _____

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In		Increase + Decrease - No Change NC	Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length	Width			
11/20/95		TRICKLE	N/A		X	X							DEW	

SEEPAGE MON'' ''ORING FIELD SHEET

Dam: B-3

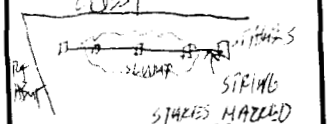
Location of Wet Area and Markers or Drain (Locate on Map): DS TOE, SEE MAP

Drain: _____ Concentrated Flow: _____ Wet Area: X

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In		Increase + Decrease - No Change NC	Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length	Width			
10/24/95		MOIST SOIL, CRYSTALLIZED	—		X					32'	4.5'	—	DEW	SET STAKES, MONITOR FOR CITE WETNESS PRIOR TO

DISPLACEMENT MONITORING FIELD SHEET

Dam: B-5



Date	Pond Elevation	Location of Displacement and Markers (Indicate on Map)	Embankment	Concrete	Crack: Longitudinal	Crack: Transverse	Slough	Crack/Slough: Width	Crack/Slough: Length	1. Horizontal: X Measurement	1. Horizontal: Movement (- PUT DOWN UNC. Widening)	2. Length: Y1 Increase + Decrease -	2. Length: Y2 Increase + Decrease -	3. Vertical: Z Measurement	3. Vertical: Movement (- Downward)	Observers Initials	Comments
4/27/95		RIGHT DS SLOPE NEAR ABT	X				X	3 8'	2 16'			NA				DKW	SET STAKES + STRING/RIEBACKED
5/3/95		"						"	"		NC	NC	NC				ONSS SET 4/25, stakes set on downstream
5/4/95		"	X				X	"	"		NC	NC	NC			E.Jon.	
5/18		"	X				X	"	"		NC	NC	NC			CEM.	LARGE PICKUP. GRADE E/W
5/22/95		"	X				X	"	"		NC	NC	NC			E.Jon.	
5/24/95		"	X				X	"	"		NC	NC	NC			E.Jon.	
5/30/95		"	X				X	"	"		NC	NC	NC			E.Jon.	LOOKS SAME
6/6/95		"	X				X	"	"		NC	NC	NC	≈1" ↓	NC	DKW	CRACK U/S, EXTENSIVE REBUNTAG.
7/21/95		"	X				X	"	"		NC	NC	NC	NC	NC	DKW	

1. + or - movement direction indicates horizontal movement, across the displacement, of downstream or right marker with respect to upstream or left marker
2. + or - indicates an increase or decrease of length of displacement, based on marked ends, where Y1 is the upstream or left marker and Y2 is the downstream or right marker

   All horizontal measurements determined from center of marker unless otherwise noted
3. + or - movement indicates vertical movement, across the displacement, of the downstream or right marker with respect to the upstream or left marker

   All vertical measurements determined from top of markers using carpenters level unless otherwise noted

MONITORING NOTE: STRING TIED BETWEEN 2 OUTSIDE STAKES OFF SLUMP AREA, MIDDLE STAKES SET W/ MARK ON TOP DIRECTLY UNDER STRING
MONITOR FOR MOVEMENT OF STAKES/MARKERS OFF STRING. NOTE ↑ INCREASE & APPROXIMATELY IF AREA APPEARS TO BE PROGRESSING TOWARDS
STAKES OFF AREA. NO 2 MARKERS ARE WITHIN DKW 4/27/95

SEEPAGE MONITORING FIELD SHEET

Dam: C-1

Location of Wet Area and Markers or Drain (Locate on Map): TOE DOWNSTREAM

Drain: X Concentrated Flow: _____ Wet Area: X

Date	Pond Elevation	Quantity: Weir Rdg./Other or Estimate/ Description	Increase + Decrease - No Change NC	Sample		Quality				Area/Change In		Increase + Decrease - No Change NC	Observers Initials	Comments
				Yes	No	Clear	Sediment	Cloudy	Soupy	Length	Width			
10/31/95		1" DP WATER @ TOE, SOFT TO 2' DP,	—		X		X			17.2'	9.4'	—	DKW	SET STAKES

1 of 8

DISPLACEMENT MONITORING FIELD SHEET

Dam: C-1

Location of Displacement and Markers (Locate on Map): _____

Embankment: X Concrete: _____

Longitudinal: X Transverse: _____ Slough: X

Date	Pond Elevation	Crack/Slough		1. Horizontal		2. Length		3. Vertical		Observers Initials	Comments
		Width	Length	X Measurement	Movement (- Widening)	Y1 Increase + Decrease -	Y2 Increase + Decrease -	Z Measurement	Movement (- Downward)		
11/20/15		1/4" to 3"	5.5'	18" (outside)	-	-	-	level	-		SET STAKES HERE TO BE SURVEYED

1. + or - movement direction indicates horizontal movement, across the displacement, of downstream or right marker with respect to upstream or left marker
2. + or - indicates an increase or decrease of length of displacement, based on marked ends, where Y1 is the upstream or left marker and Y2 is the downstream or right marker

   All horizontal measurements determined from center of marker unless otherwise noted
3. + or - movement indicates vertical movement, across the displacement, of the downstream or right marker with respect to the upstream or left marker

   All vertical measurements determined from top of markers using carpenters level unless otherwise noted

DISPLACEMENT MO[illegible]ORING FIELD SHEET

Dam: C-2

Date	Pond Elevation	Location of Displacement and Markers (Indicate on Map)	Embankment	Concrete	Crack: Longitudinal	Crack: Transverse	Slough	Crack/Slough: Width	Crack/Slough: Length	1. Horizontal: X Measurement	1. Horizontal: Movement (- Widening)	2. Length: Y1 Increase + Decrease -	2. Length: Y1 Increase + Decrease -	3. Vertical: Z Measurement	3. Vertical: Movement (- Downward)	Observers Initials	Comments
5/31/95		CREST & 1' FROM US SLOPE	X		X			1/2 - 1/2"	VARIOUS	15.5"				LEVEL		MCW	INITIAL
6/5/95		"	X		X			"	"	15 5/8"	-1/4"			"		EJom.	
6/27/95		"	X		X					15 3/8"	-0			-1/8	-	DKW	
6/22/95		"	X		X			"	"	15 5/8"	0			0	-	EJom.	
7/20/95		"	X		X					15 3/8"	-1/4"			-1/8"		DKW	VISUALLY - CRACK BARELY DISCERNIBLE
11/20/95			X		X			"	"	[illegible]				[illegible]		DKW	VISUAL CHECK, NO NOTICEABLE CHANGE

1. + or - movement direction indicates horizontal movement, across the displacement, of downstream or right marker with respect to upstream or left marker

2. + or - indicates an increase or decrease of length of displacement, based on marked ends, where Y1 is the upstream or left marker and Y2 is the downstream or right marker

All horizontal measurements determined from center of marker unless otherwise noted

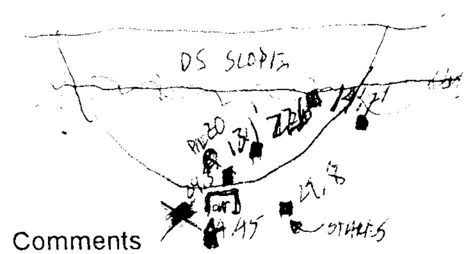
3. + or - movement indicates vertical movement, across the displacement, of the downstream or right marker with respect to the upstream or left marker

All vertical measurements determined from top of markers using carpenters level unless otherwise noted

STAKES POUNDED AT APPARENT ENDS OF CRACKS AT VARIOUS LOCATIONS ALONG CREST. "E" INDICATES ENDS OF CRACKS POINTING INWARDS TOWARDS CRACK. CRACK GENERALLY INTERMITTENT THROUGHOUT LENGTH OF CREST. 1 LOCATION STAKES SET FOR X + Z [illegible] OF CREST NOTE APPARENT INCREASE OF ENDS OF CRACKS AT VARIOUS "Y" LOCATIONS

SEEPAGE FIELD SHEET

DAM: LANDFILL

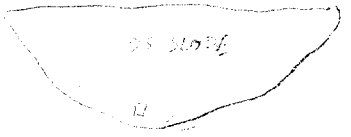


Date	Pond Elevation	Location of Wet Area or Drain	Drain	Concentrated Flow	Wet Area	Quantity: Weir Rdg./Other or Estimate/Description	Increase + Decrease - NC	Jar Sample: Yes	Jar Sample: No	Quality: Clear	Quality: Sediment	Quality: Cloudy	Quality: Soupy	Wet Area or Area Change: Length	Wet Area or Area Change: Width	Increase + Decrease - NC	Observers Initials	Comments
5/2/95	5918	DS SLOPE LEFT ABUT+TOE			X	SPONGY W/STANDING H2O			X	X				100'	38'		DEW	
5/3/95	5918	"			X	"	NC		X	X						NC	DEW	SET STAKES, APPROX. LIMITS
5/4/95	5917.92	"			X	"	NC		X	X						NC	S.Jm.	NO CHANGE noticed
5/5/95	5917.7	"			X	"	Dec		X	X				2(-2')	Around	DC	CRH	Area [illegible] H2O [illegible]
5/6/95	5917.35	"			X	"	DC		X	X				3-1'+ Pa.		DC	[illegible]	LOOKS ALOT DRIER.
5/7/95	5916.8	"			X	Muddy and Damp	DC		X		—	—		12'	12'	DC	EJm	
5/8/95	5916.4	"			X	"	DC		X		—	—		7'	7'	DC	EJm.	
5/10/95	5915.1	"			X	"	DC		X		—	—		5'	5'	DC	EJm.	
5/11/95	5915.1	"			X	"	Same		X		—	—		5'	5'	NC	EJm.	
5/15/95	5915.1	"			X	"	NC		X		—	—		5'	5'	NC	EJm.	
5/17/95		"			X	"	IN		X		—	—		Channel to wet		IN	EJm.	LARGE STORM FILLED DAM AGAIN
5/18/95	5918.1	"			X	" w/STANDING H2O	IN		X	X				20'	80'	IN	EJm.	
5/21/95	5918.2	"			X	"	DC		X	X	—	—		18'	60'	DC	EJm	LOOKS MUCH BETTER
5/22/95	"	"			X	" w/o STANDING H2O	DC		X		—	—		15'	40'	DC	EJm.	
5/24/95	5918.8	"			X	?. TOO WET	?		X	X				?	?	?	EJm.	RAINFALL PREVENTED PROPER. INSP.
5/31/95	5919.4	"			X	? TOO WET	?		X	X	—			?	?	?	[illegible]	"
		DISCONTINUED																

MONITOR AREA FOR INCREASE IN AREA UP DAM FACE + ABUT, INCREASED AREA @ CHANNEL + OFF DAM NOT AS CRITICAL BUT SHOULD BE NOTED

SEEPAGE FIELD SHEET

DAM: LANDFILL

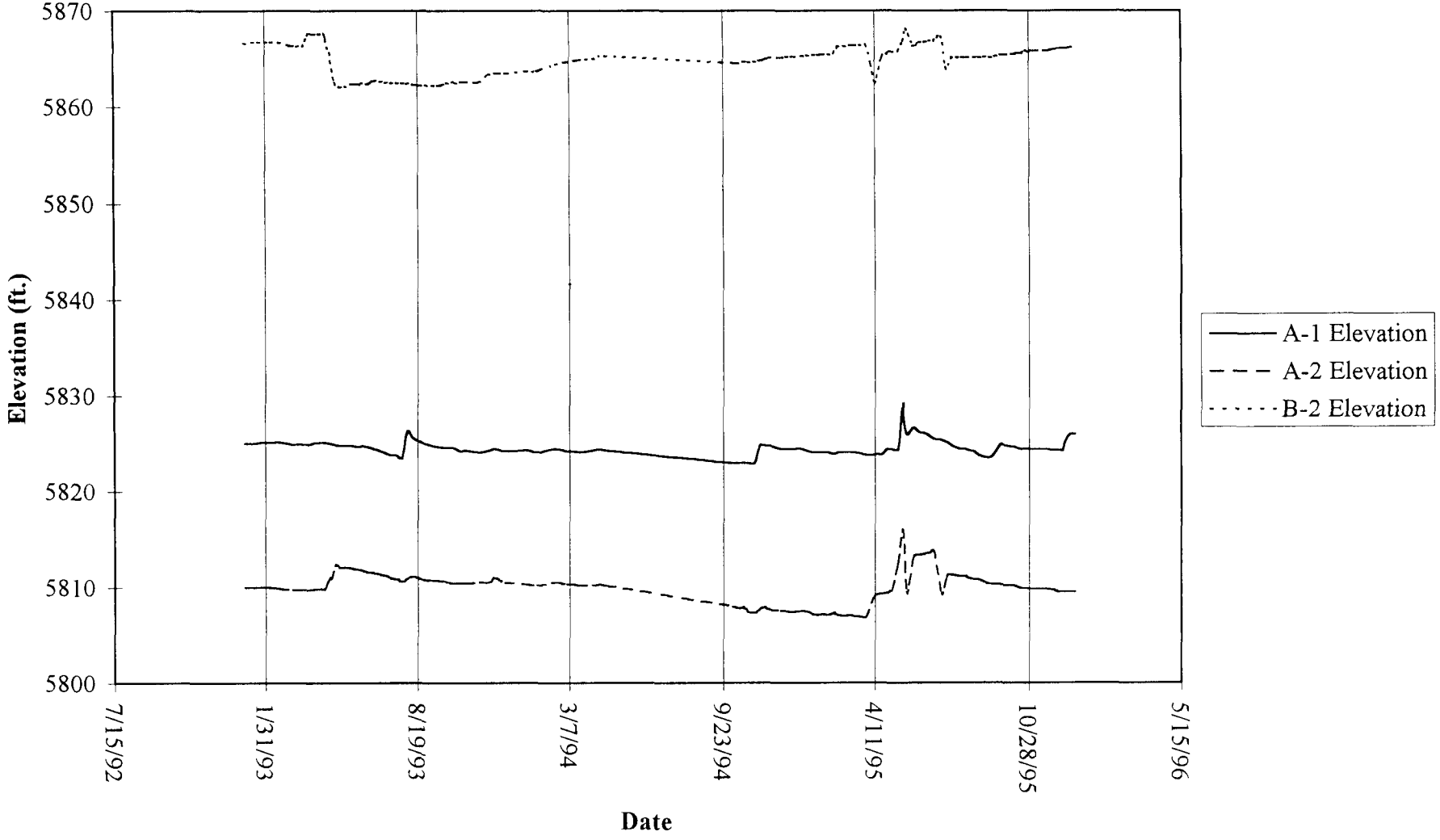


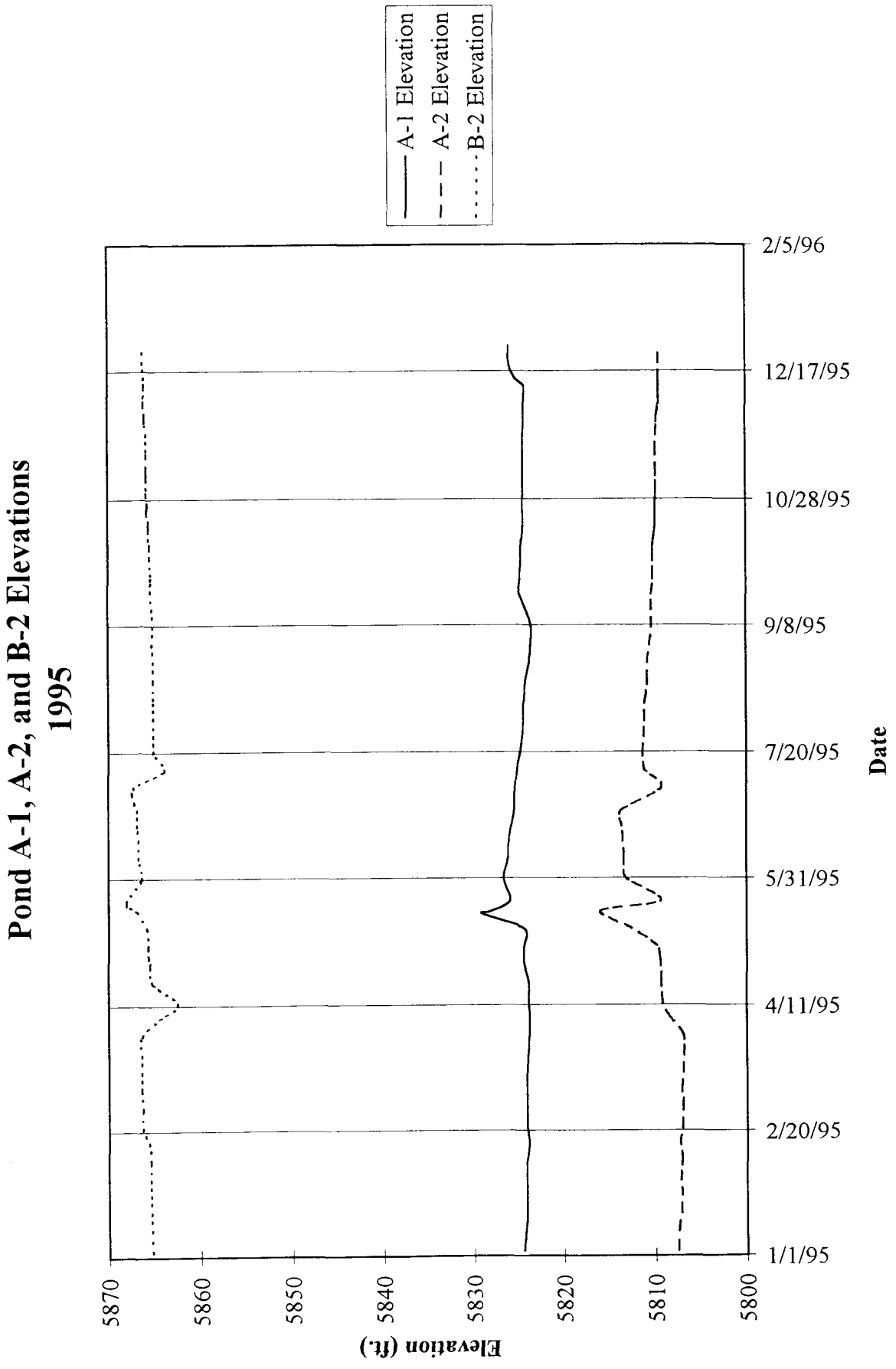
Date	Pond Elevation	Location of Wet Area or Drain	Drain	Concentrated Flow	Wet Area	Quantity:Weir Rdg./Other or Estimate/Description	Increase + Decrease - NC	Jar Sample Yes	Jar Sample No	Quality Clear	Quality Sediment	Quality Cloudy	Quality Soupy	Wet Area or Area Change Length	Wet Area or Area Change Width	Increase + Decrease - NC	Observers Initials	Comments
5/19/95		ALONG ABUT			X	SPONGY AREA			X	X				80'	20'		DKW	AREA NOT STAKED, 3.5" w/PROBE
5/19/95					X	1" LESS WTR	X		X	X				—	5?	—	DKW	
5·20·95	5918.2	LFT. ABTMNT			X	drying, less spongy	D		X	X							ejm	
5·20·95	"	RT " "			X	less spongy	D		X	X							ejm	two very small pools
5/21/95	"	RT "			X	IMPROVED	D		X	—				20'	15'		EJM	
5/22/95	"	"			X	IMPROVED	D		X	—				8'	8'		E.S.	
5/24/95	5918.8	"			X	? TOO WET	?		X	X	—			?	?		CW	RAINFALL PREVENTED PROP. INSP.
5/30/95	5919.4	"			X	? TOO WET	?		X	X	—			?	?		EJM	RAINFALL PREVENTING PROPER INSP
		DISCONTINUED																

APPENDIX D - POND AND PIEZOMETER ELEVATION GRAPHS

85

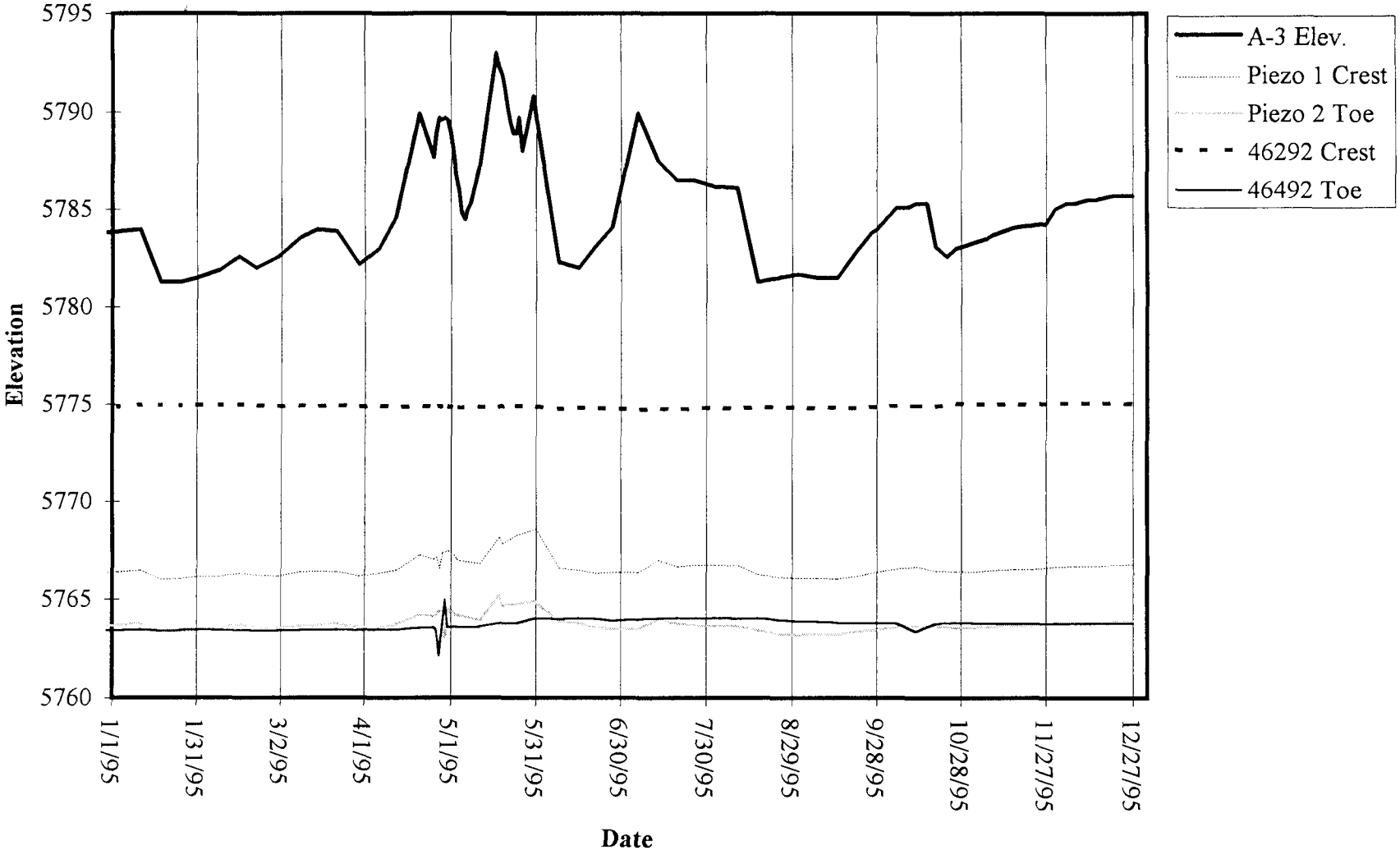
Pond A-1, A-2, and B-2 Elevations
1991-1995



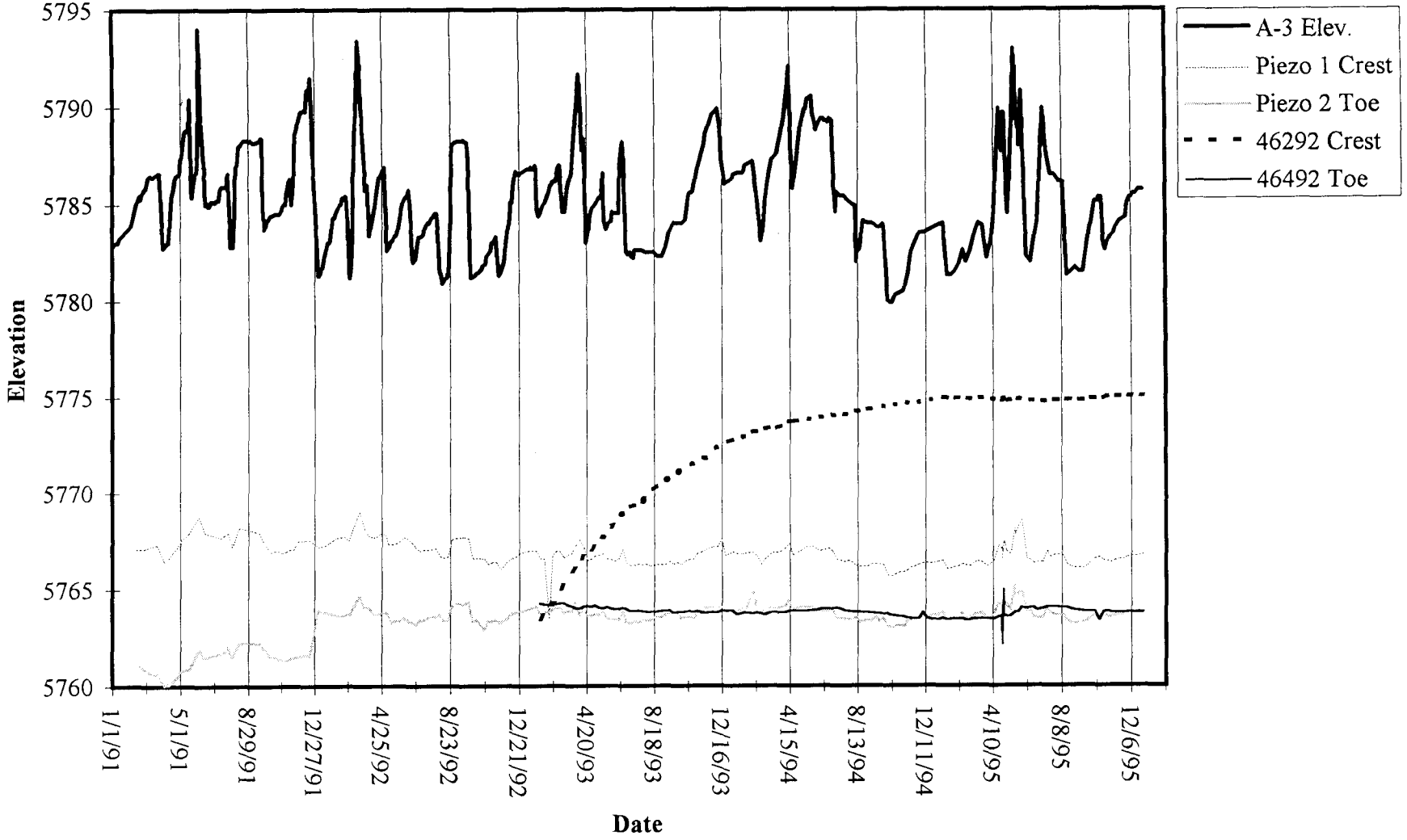

Pond A-1, A-2, and B-2 Elevations
1995
A-1 Elevation
A-2 Elevation
B-2 Elevation
Elevation (ft.)
5870
5860
5850
5840
5830
5820
5810
5800
Date
1/1/95
2/20/95
4/11/95
5/31/95
7/20/95
9/8/95
10/28/95
12/17/95
2/5/96

82
93

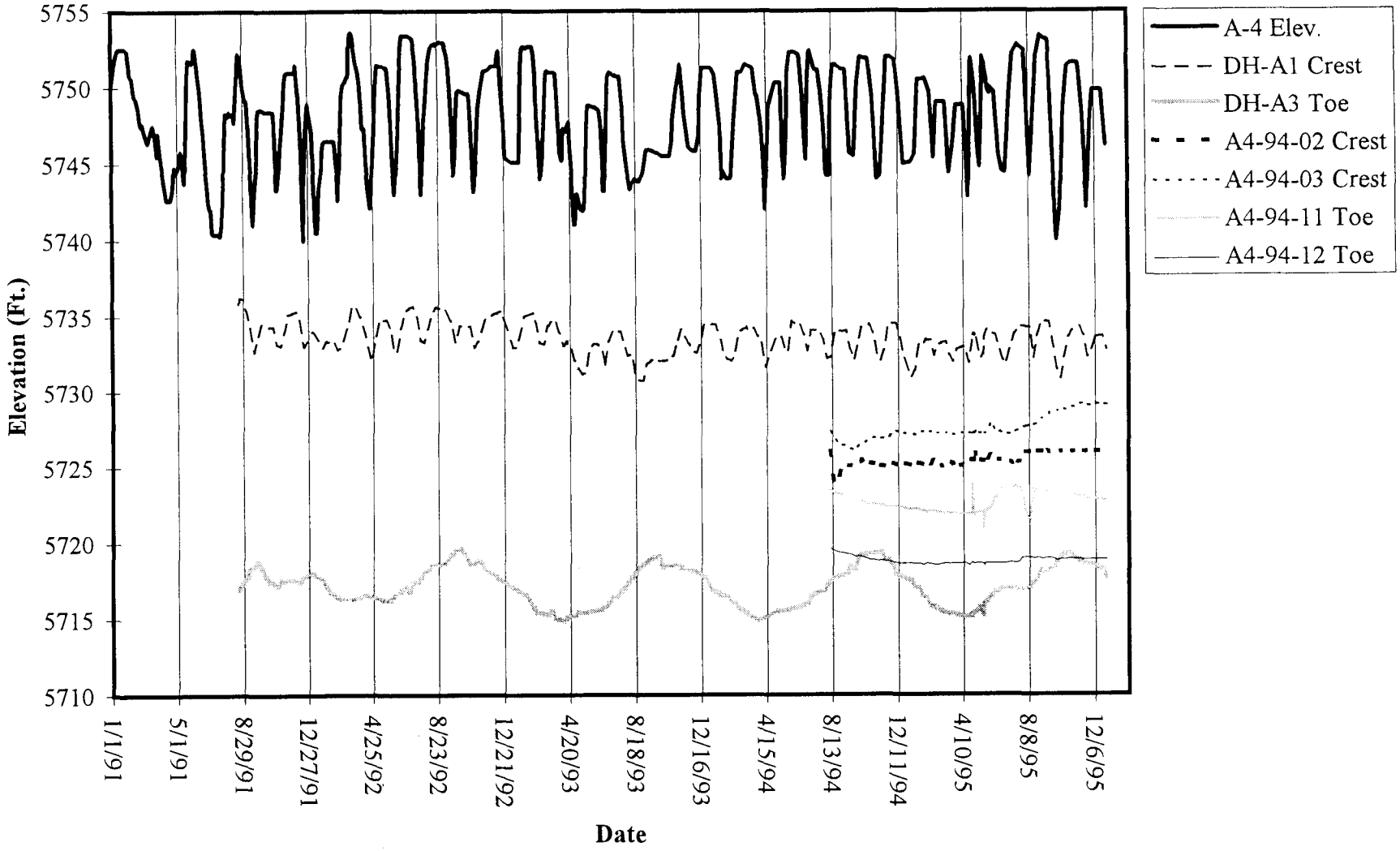
Pond A-3 Elevation Vs. Piezometers
1995

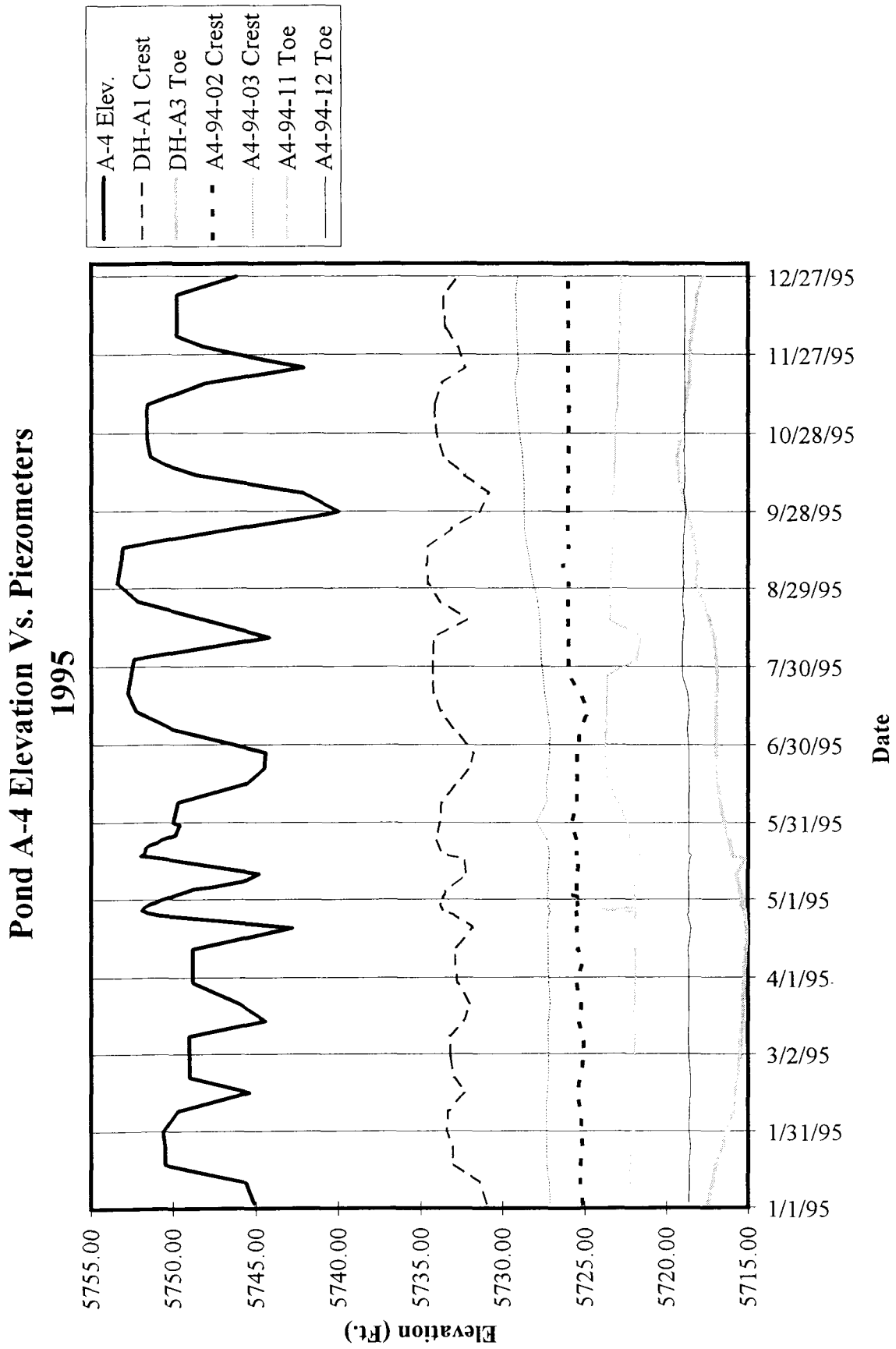


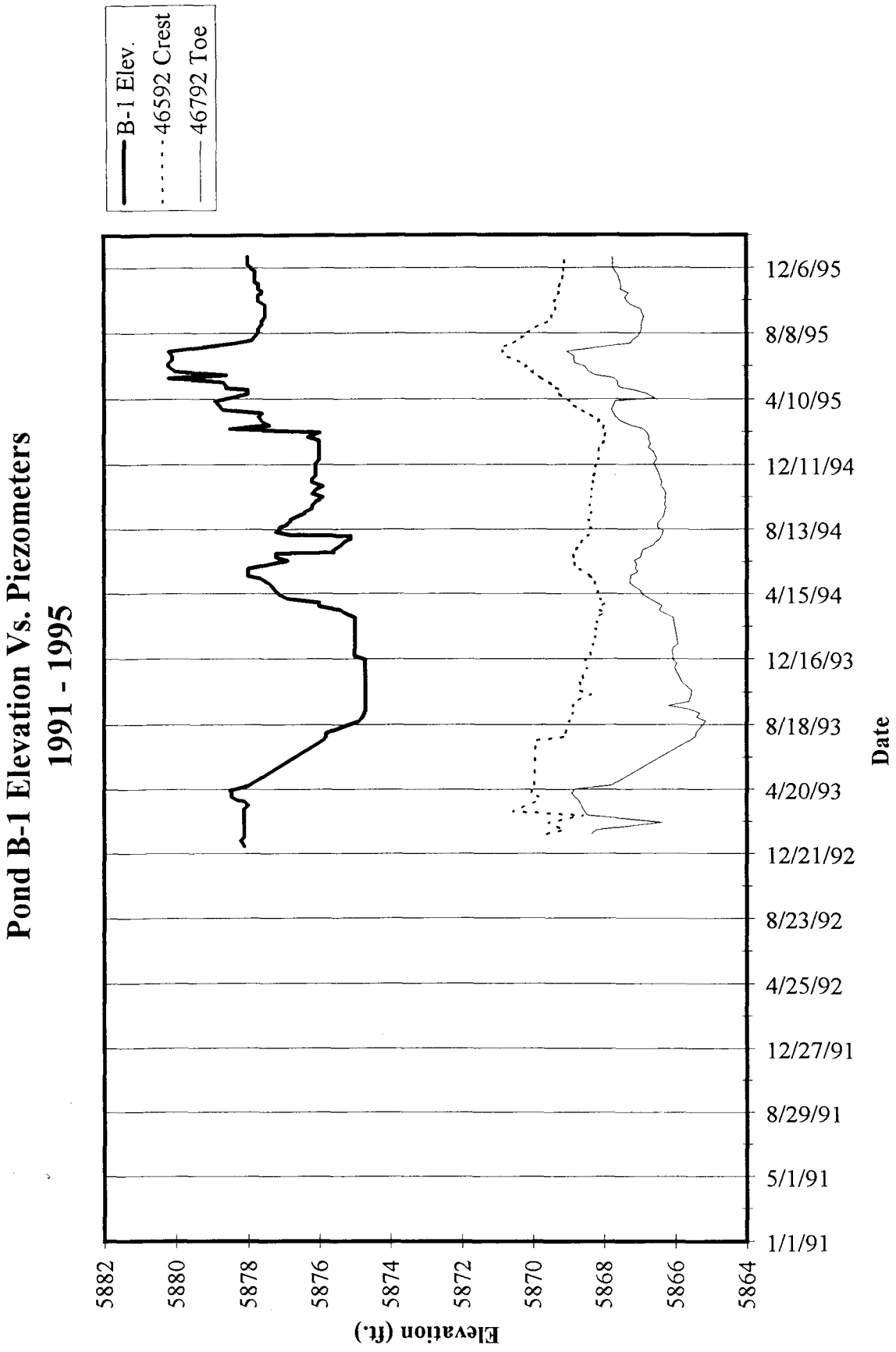
Pond A-3 Elevation Vs. Piezometers
1991 - 1995

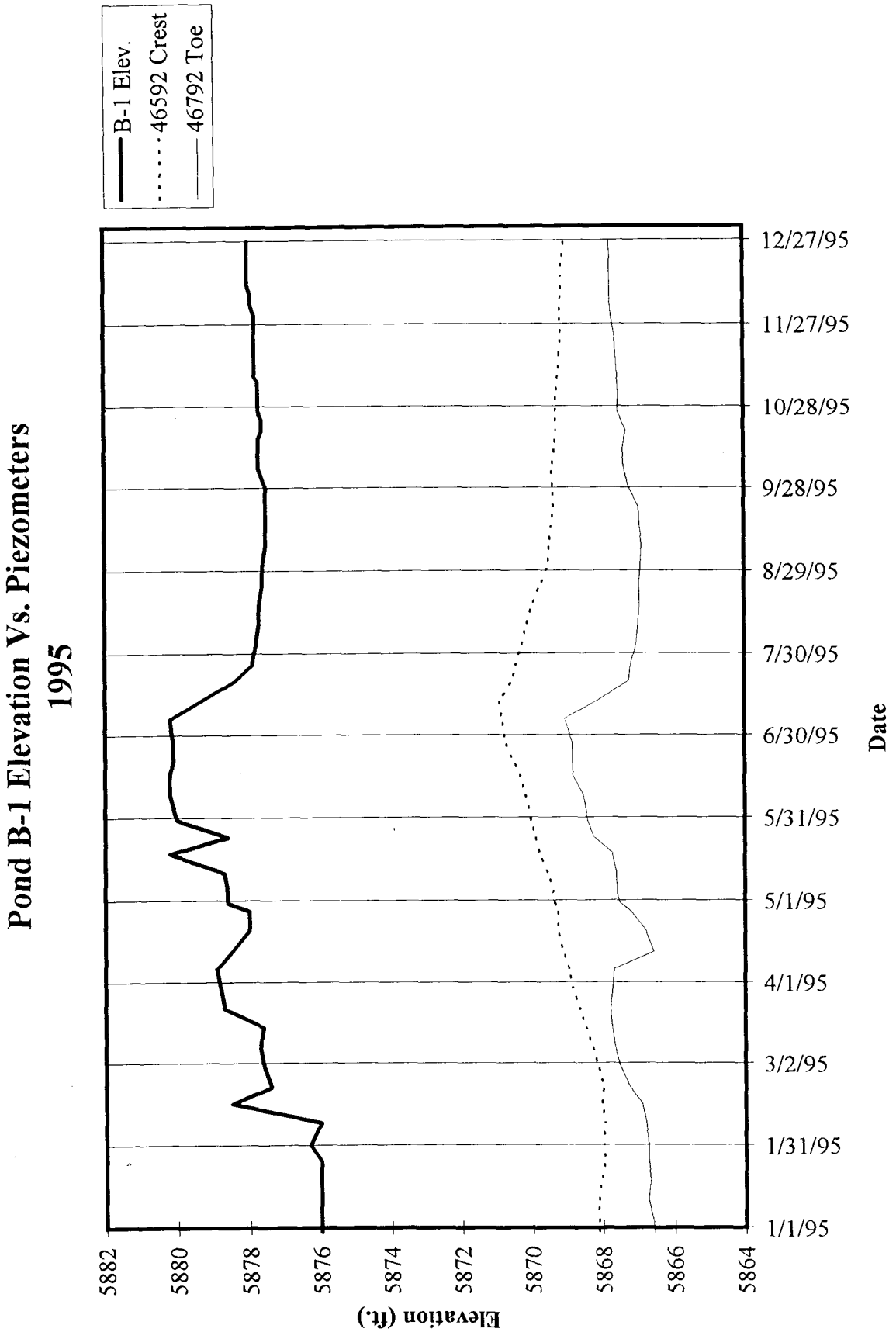


Pond A-4 Elevation Vs. Piezometers
1991 - 1995



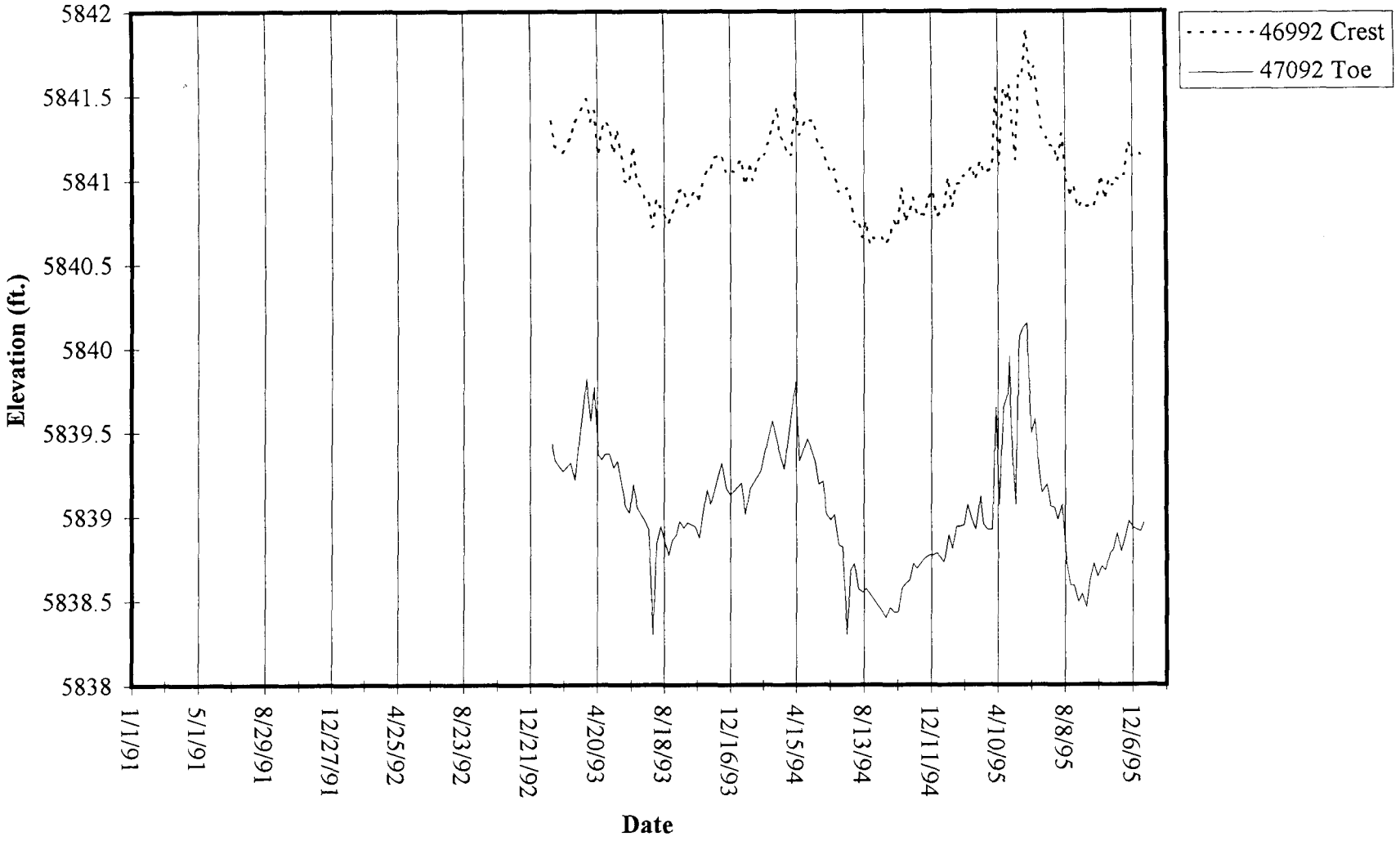

Pond A-4 Elevation Vs. Piezometers
1995
A-4 Elev.
DH-A1 Crest
DH-A3 Toe
A4-94-02 Crest
A4-94-03 Crest
A4-94-11 Toe
A4-94-12 Toe
Elevation (Ft.)
5755.00
5750.00
5745.00
5740.00
5735.00
5730.00
5725.00
5720.00
5715.00
Date
12/27/95
11/27/95
10/28/95
9/28/95
8/29/95
7/30/95
6/30/95
5/31/95
5/1/95
4/1/95
3/2/95
1/31/95
1/1/95


Pond B-1 Elevation Vs. Piezometers
1991 - 1995
B-1 Elev.
46592 Crest
46792 Toe
Elevation (ft.)
5882
5880
5878
5876
5874
5872
5870
5868
5866
5864
Date
12/6/95
8/8/95
4/10/95
12/11/94
8/13/94
4/15/94
12/16/93
8/18/93
4/20/93
12/21/92
8/23/92
4/25/92
12/27/91
8/29/91
5/1/91
1/1/91

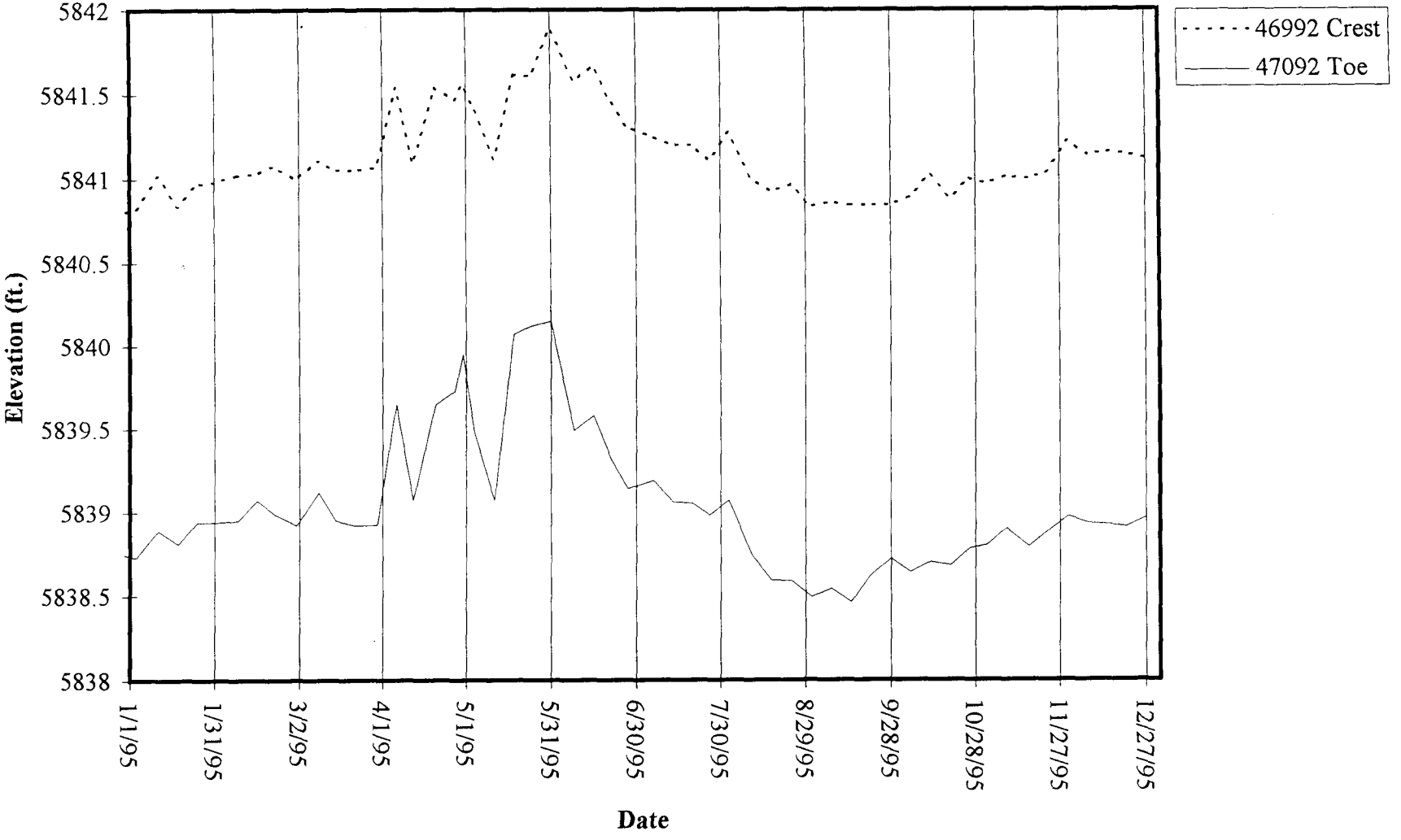

Pond B-1 Elevation Vs. Piezometers
1995
B-1 Elev.
46592 Crest
46792 Toe
Elevation (ft.)
5882
5880
5878
5876
5874
5872
5870
5868
5866
5864
Date
12/27/95
11/27/95
10/28/95
9/28/95
8/29/95
7/30/95
6/30/95
5/31/95
5/1/95
4/1/95
3/2/95
1/31/95
1/1/95

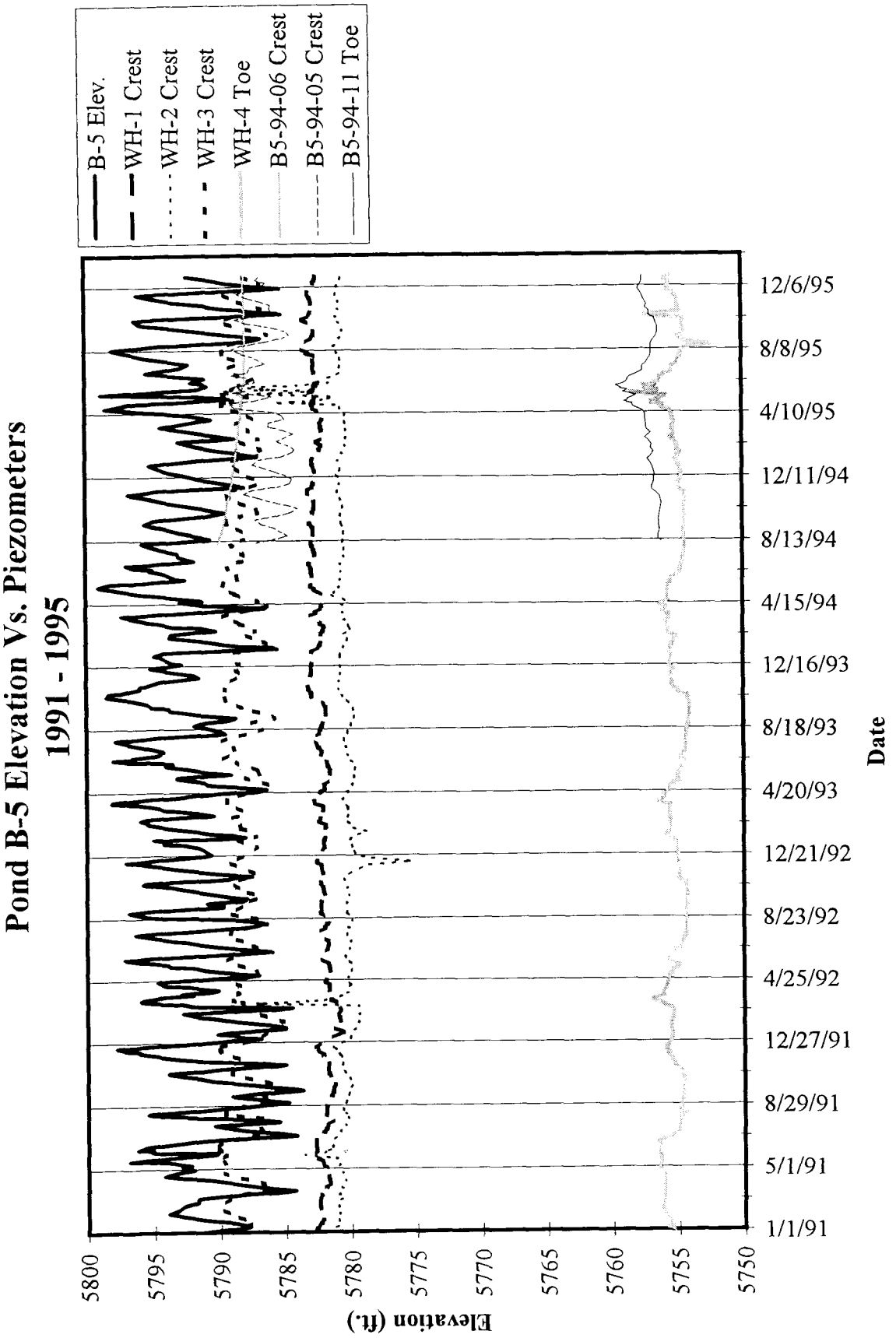
93
19

Pond B3 Piezometers
1991 - 1995

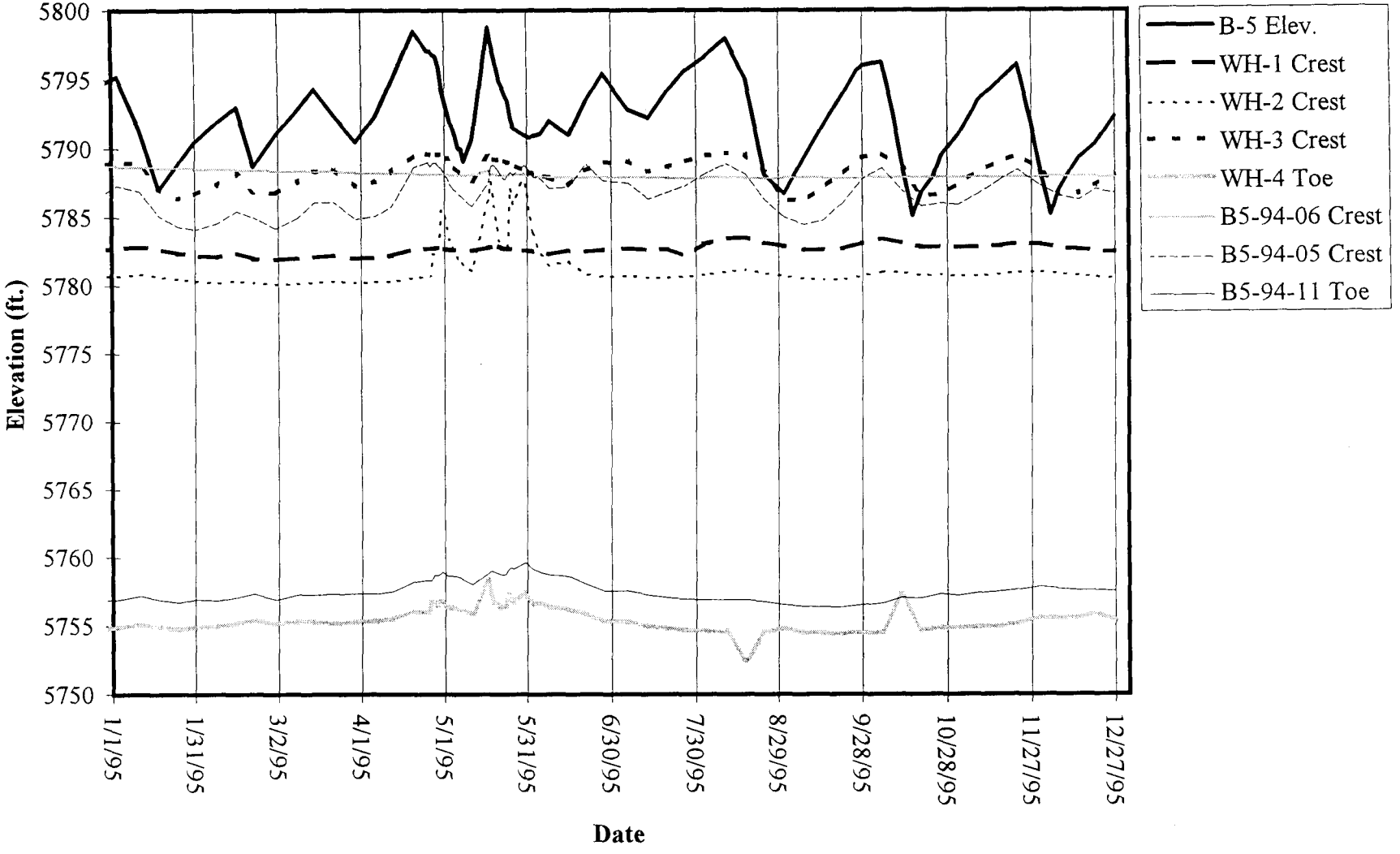


Pond B3 Piezometers
1995

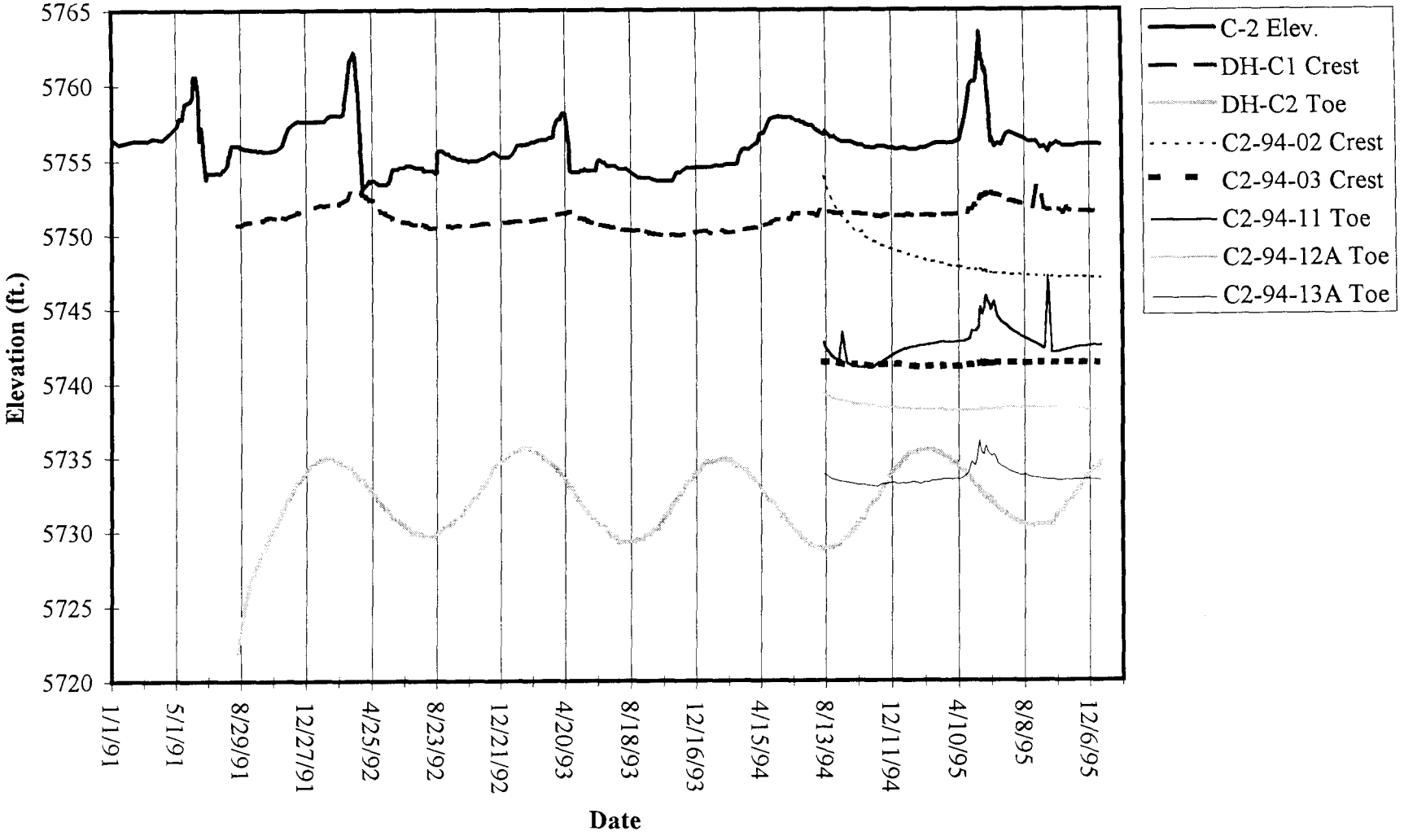


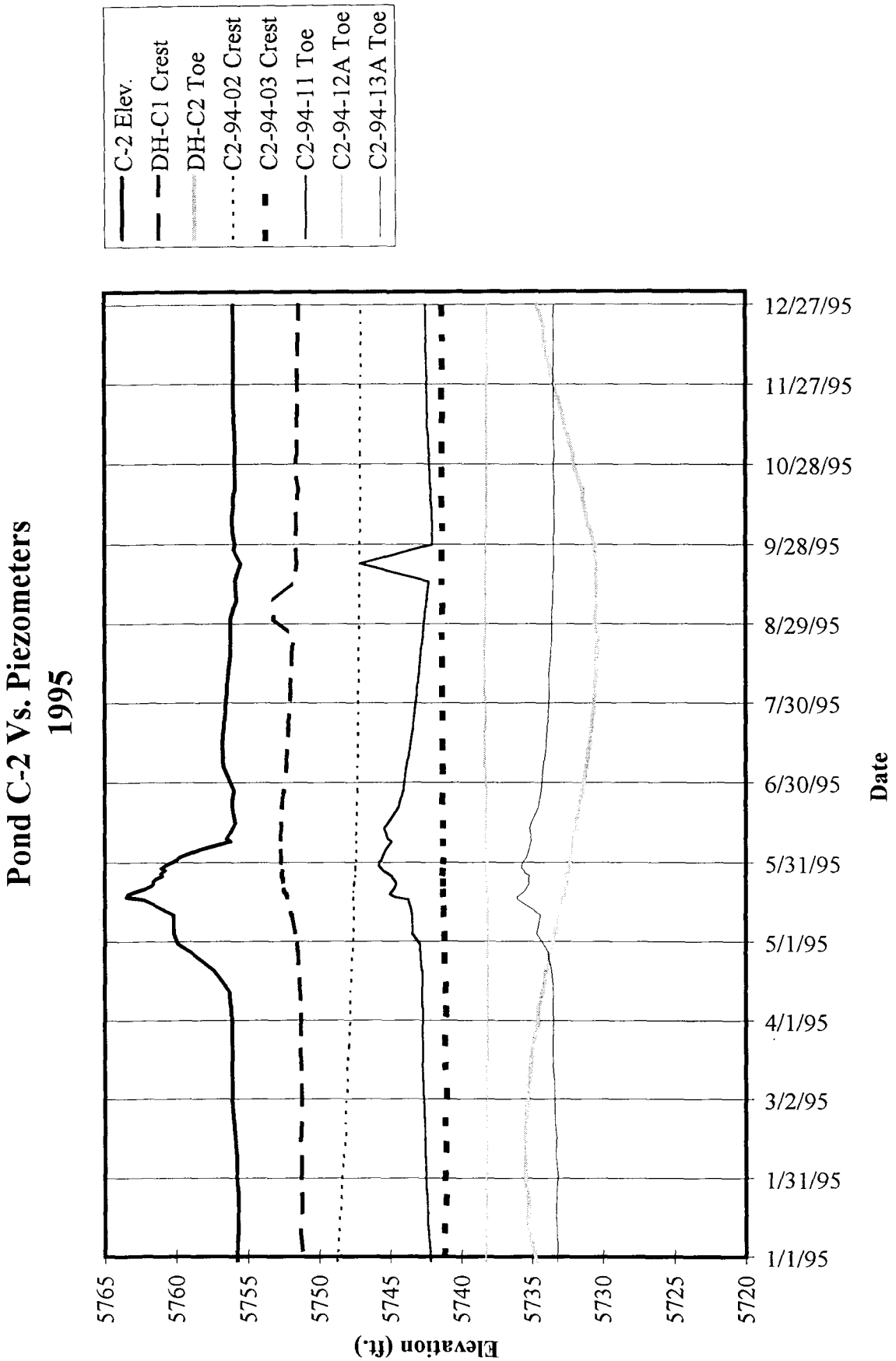

Pond B-5 Elevation Vs. Piezometers
1991 - 1995
B-5 Elev.
WH-1 Crest
WH-2 Crest
WH-3 Crest
WH-4 Toe
B5-94-06 Crest
B5-94-05 Crest
B5-94-11 Toe
Elevation (ft.)
5800
5795
5790
5785
5780
5775
5770
5765
5760
5755
5750
Date
12/6/95
8/8/95
4/10/95
12/11/94
8/13/94
4/15/94
12/16/93
8/18/93
4/20/93
12/21/92
8/23/92
4/25/92
12/27/91
8/29/91
5/1/91
1/1/91

Pond B-5 Elevation Vs. Piezometers
1995

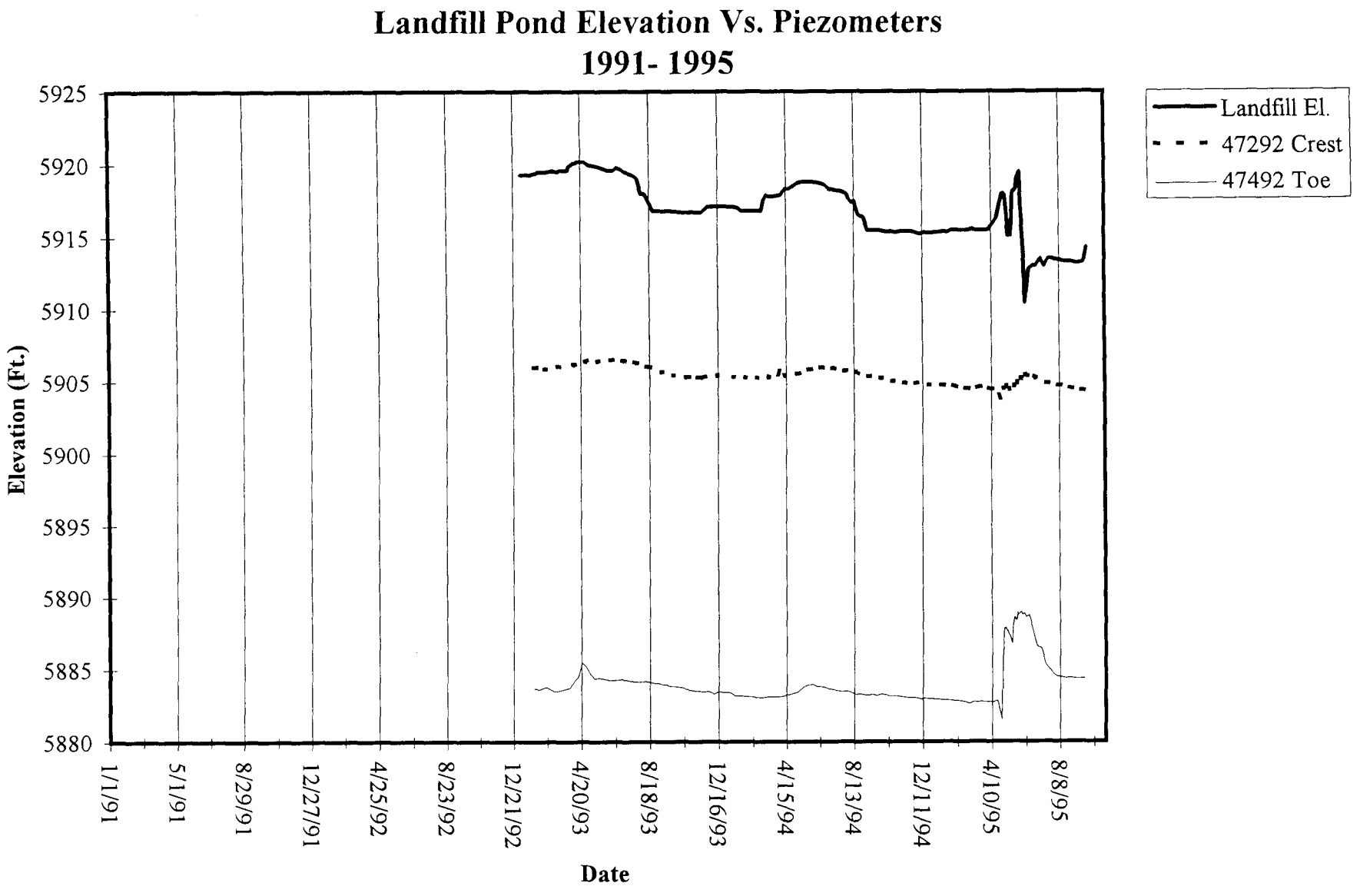


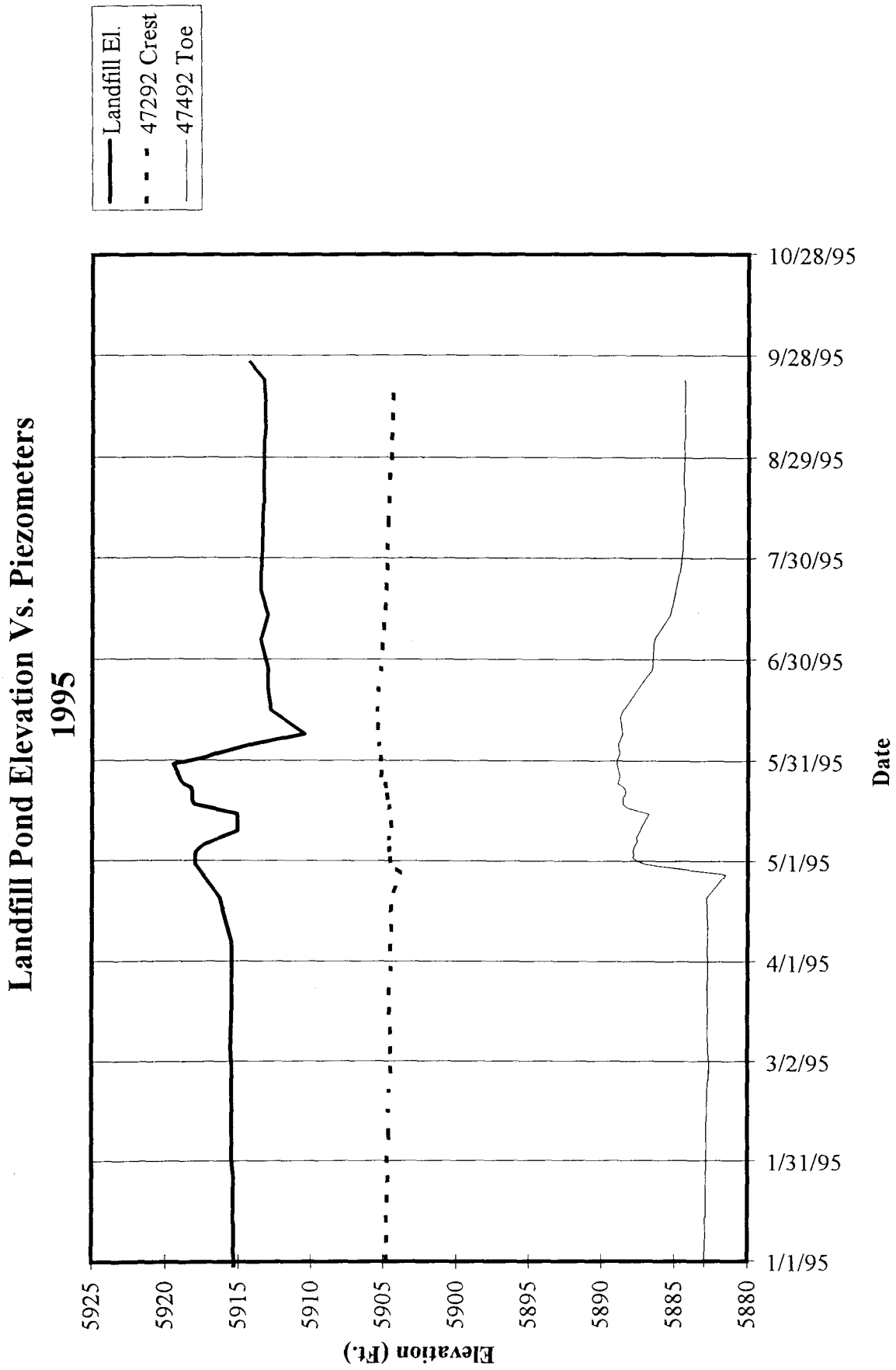
Pond C-2 Vs. Piezometers
1991 - 1995




Pond C-2 Vs. Piezometers
1995
C-2 Elev.
DH-C1 Crest
DH-C2 Toe
C2-94-02 Crest
C2-94-03 Crest
C2-94-11 Toe
C2-94-12A Toe
C2-94-13A Toe
Elevation (ft.)
5765
5760
5755
5750
5745
5740
5735
5730
5725
5720
Date
12/27/95
11/27/95
10/28/95
9/28/95
8/29/95
7/30/95
6/30/95
5/31/95
5/1/95
4/1/95
3/2/95
1/31/95
1/1/95

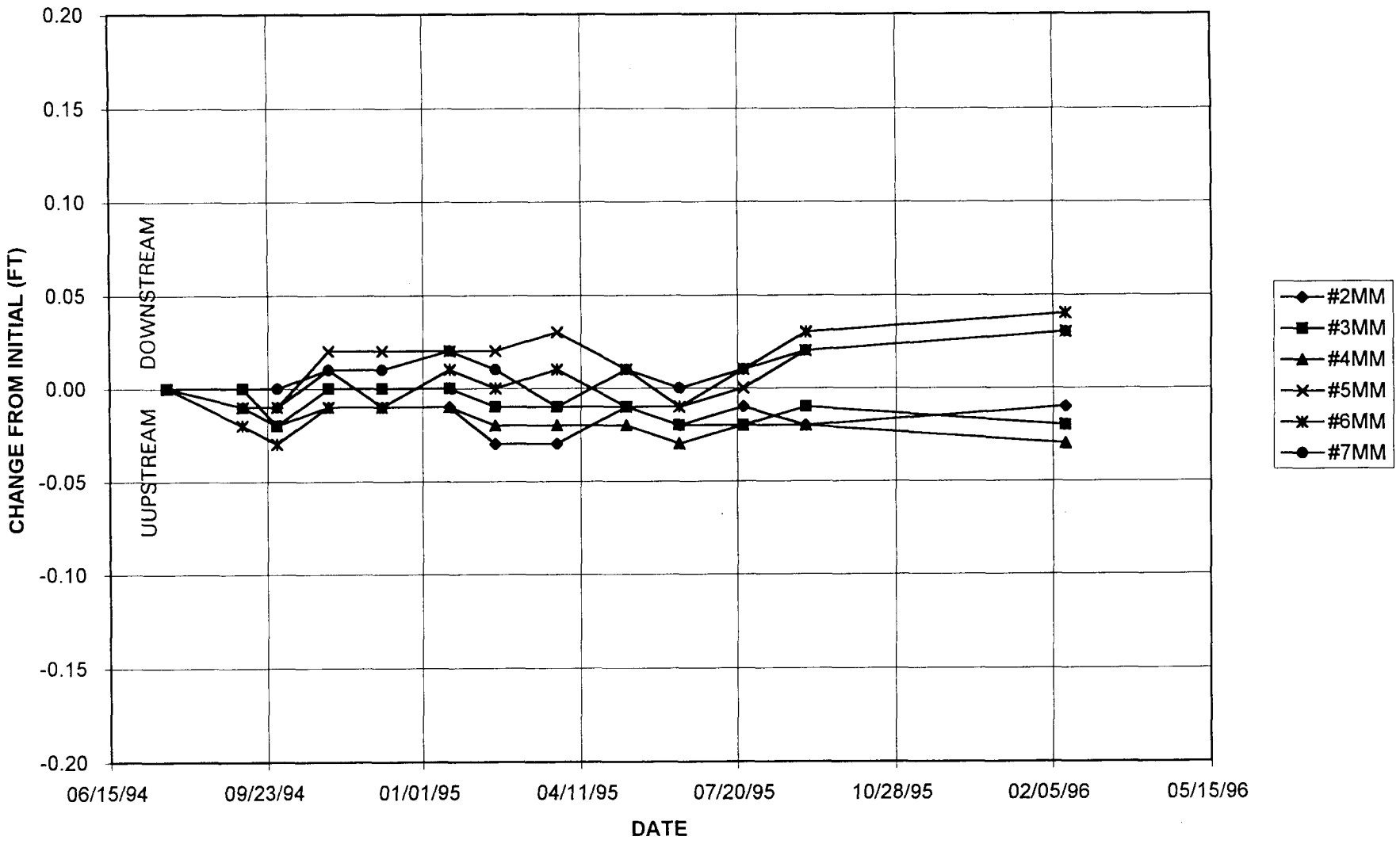
IB
99


Landfill Pond Elevation Vs. Piezometers
1991- 1995
Elevation (Ft.)
5925
5920
5915
5910
5905
5900
5895
5890
5885
5880
1/1/91
5/1/91
8/29/91
12/27/91
4/25/92
8/23/92
12/21/92
4/20/93
8/18/93
12/16/93
4/15/94
8/13/94
12/11/94
4/10/95
8/8/95
Date
Landfill El.
47292 Crest
47492 Toe

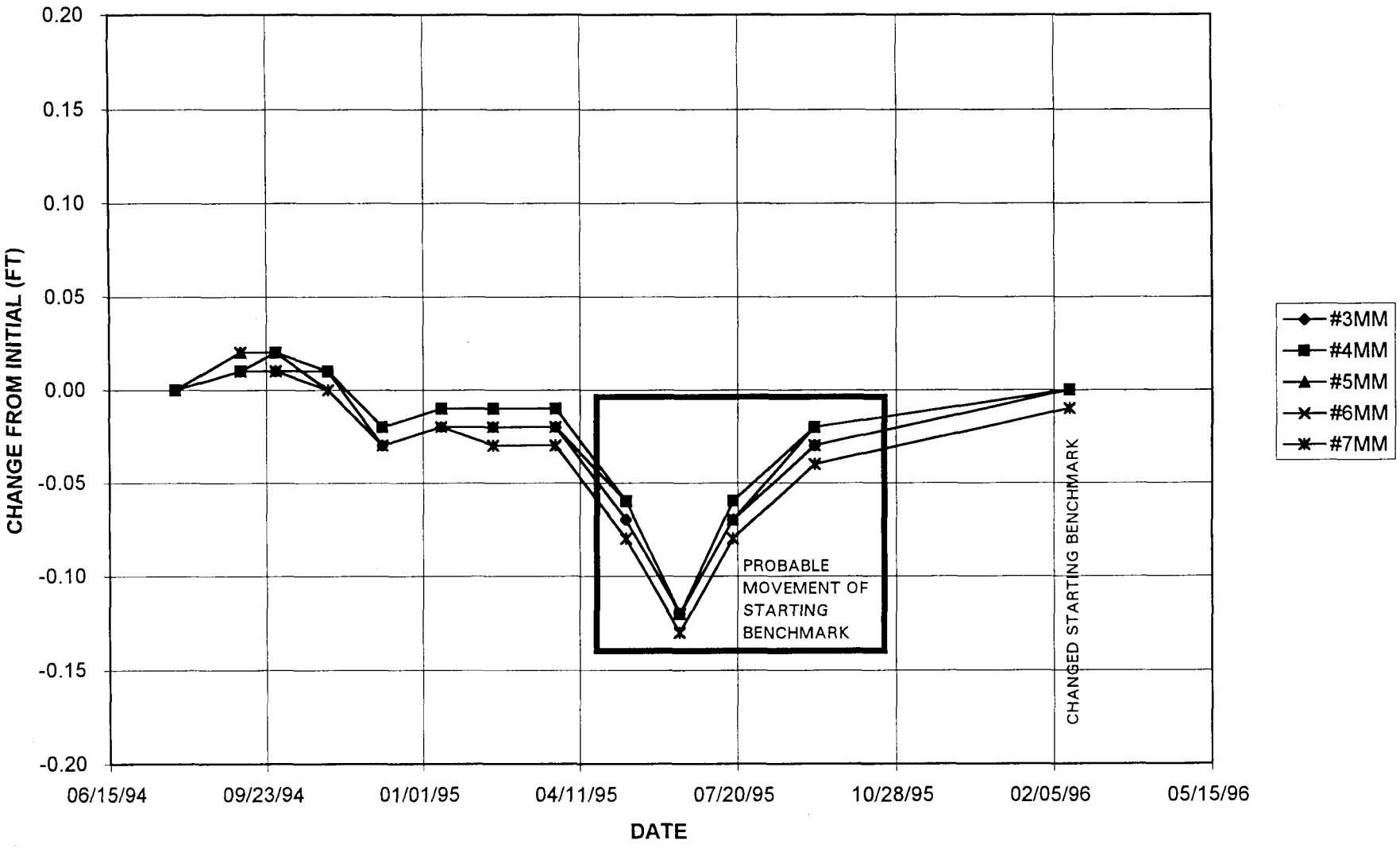

Landfill Pond Elevation Vs. Piezometers
1995
Landfill El.
47292 Crest
47492 Toe
Elevation (Ft.)
5925
5920
5915
5910
5905
5900
5895
5890
5885
5880
Date
10/28/95
9/28/95
8/29/95
7/30/95
6/30/95
5/31/95
5/1/95
4/1/95
3/2/95
1/31/95
1/1/95

APPENDIX E - MOVEMENT MONUMENT MONITORING RESULTS

DAM A-4 MONUMENTS, HORIZONTAL MEASUREMENTS



DAM A-4 MONUMENTS, VERTICAL MEASUREMENTS



DAM A-4 MOVEMENT MONUMENTS

02/22/96 :REPORT DATE

HORIZONTAL MEASUREMENTS + MEASUREMENTS ARE IN THE DOWNSTREAM DIRECTION, - MEASUREMENTS ARE IN THE UPSTREAM DIRECTION

DATE	FB/PG	OFFDAM DIST. #2MM	DELTA INIT. #2MM	DELTA PREV. #2MM	DIST. #3MM	DELTA INIT. #3MM	DELTA PREV. #3MM	DIST. #4MM	DELTA INIT. #4MM	DELTA PREV. #4MM	DIST. #5MM	DELTA INIT. #5MM	DELTA PREV. #5MM	DIST. #6MM	DELTA INIT. #6MM	DELTA PREV. #6MM	DIST. #7MM	DELTA INIT. #7MM	DELTA PREV. #7MM	COMMENTS
07/21/94	12/65	729.18	0.00	0.00	613.98	0.00	0.00	667.54	0.00	0.00	698.14	0.00	0.00	690.80	0.00	0.00	649.29	0.00	0.00	INITIAL
09/07/94	13/63	729.17	-0.01	-0.01	613.98	0.00	0.00	667.53	-0.01	-0.01	698.13	-0.01	-0.01	690.78	-0.02	-0.02	649.29	0.00	0.00	
09/29/94	14/24	729.17	-0.01	0.00	613.96	-0.02	-0.02	667.52	-0.02	-0.01	698.13	-0.01	0.00	690.77	-0.03	-0.01	649.29	0.00	0.00	
11/01/94	14/66	729.18	0.01	0.02	613.98	0.00	0.02	667.53	-0.01	0.01	698.16	0.02	0.03	690.79	-0.01	0.02	649.30	0.01	0.01	
12/06/94	15/19	729.17	-0.01	-0.02	613.98	0.00	0.00	667.53	-0.01	0.00	698.16	0.02	0.00	690.79	-0.01	0.00	649.30	0.01	0.00	
01/18/95	15/39	729.17	-0.01	0.00	613.98	0.00	0.00	667.53	-0.01	0.00	698.16	0.02	0.00	690.81	0.01	0.02	649.31	0.02	0.01	
02/16/95	15/70	729.15	-0.03	-0.02	613.97	-0.01	-0.01	667.52	-0.02	-0.01	698.16	0.02	0.00	690.80	0.00	-0.01	649.30	0.01	-0.01	
03/27/95	16/28	729.15	-0.03	0.00	613.97	-0.01	0.00	667.52	-0.02	0.00	698.17	0.03	0.01	690.81	0.01	0.01	649.28	-0.01	-0.02	
05/10/95	16/50	729.17	-0.01	0.02	613.97	-0.01	0.00	667.52	-0.02	0.00	698.15	0.01	-0.02	690.79	-0.01	-0.02	649.30	0.01	0.02	
06/13/95	16/67	729.16	-0.02	-0.01	613.96	-0.02	-0.01	667.51	-0.03	-0.01	698.13	-0.01	-0.02	690.79	-0.01	0.00	649.29	0.00	-0.01	
07/24/95	17/7	729.17	-0.01	0.01	613.96	-0.02	0.00	667.52	-0.02	0.01	698.14	0.00	0.01	690.81	0.01	0.02	649.30	0.01	0.01	
09/01/95	17/36	729.16	-0.02	-0.01	613.97	-0.01	0.01	667.52	-0.02	0.00	698.16	0.02	0.02	690.83	0.03	0.02	649.31	0.02	0.01	
02/13/96	17/64	729.17	-0.01	0.01	613.96	-0.02	-0.01	667.51	-0.03	-0.01	698.17	0.03	0.01	690.84	0.04	0.01	649.32	0.03	0.01	

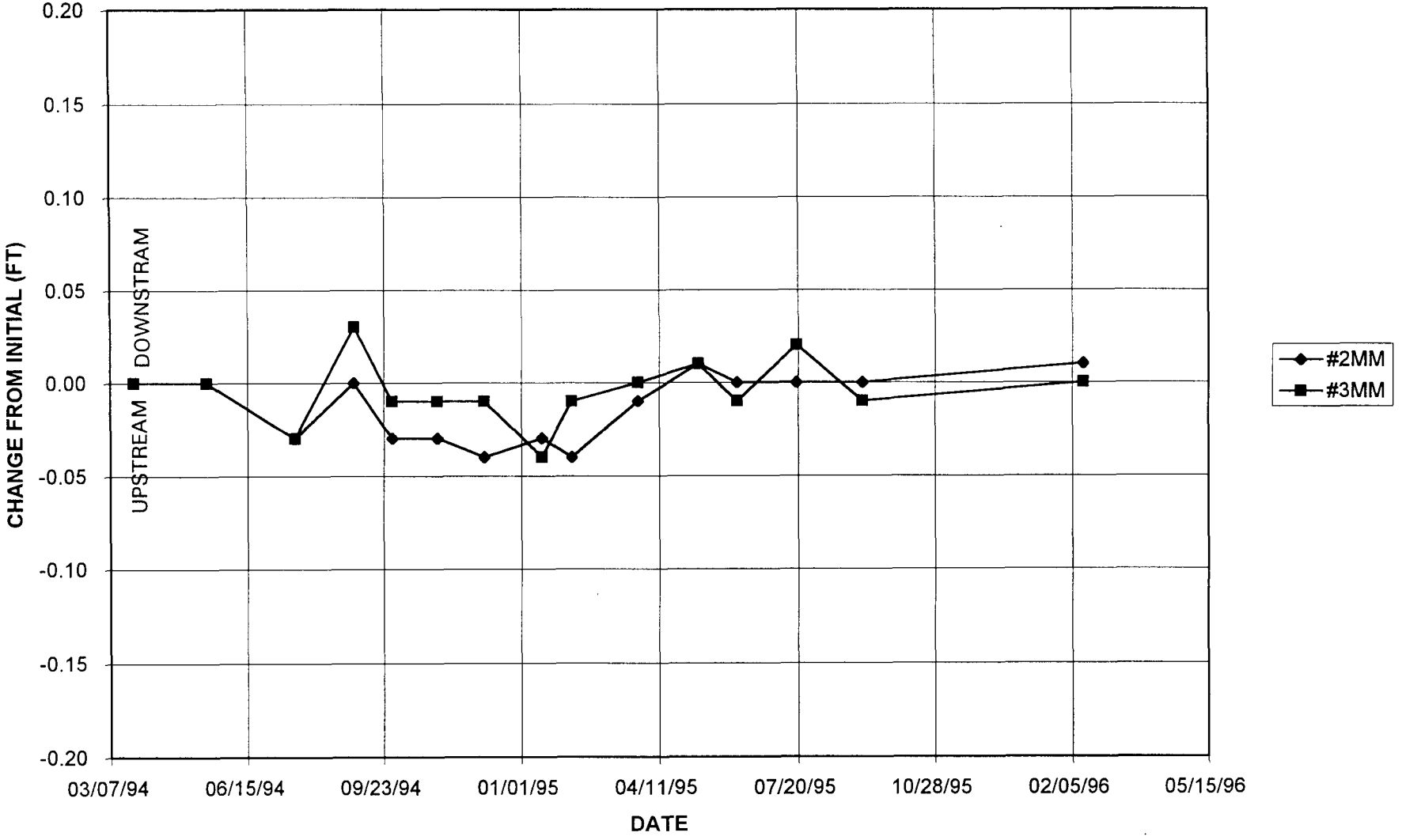
DAM A-4 MOVEMENT MONUMENTS

02/22/96 :REPORT DATE

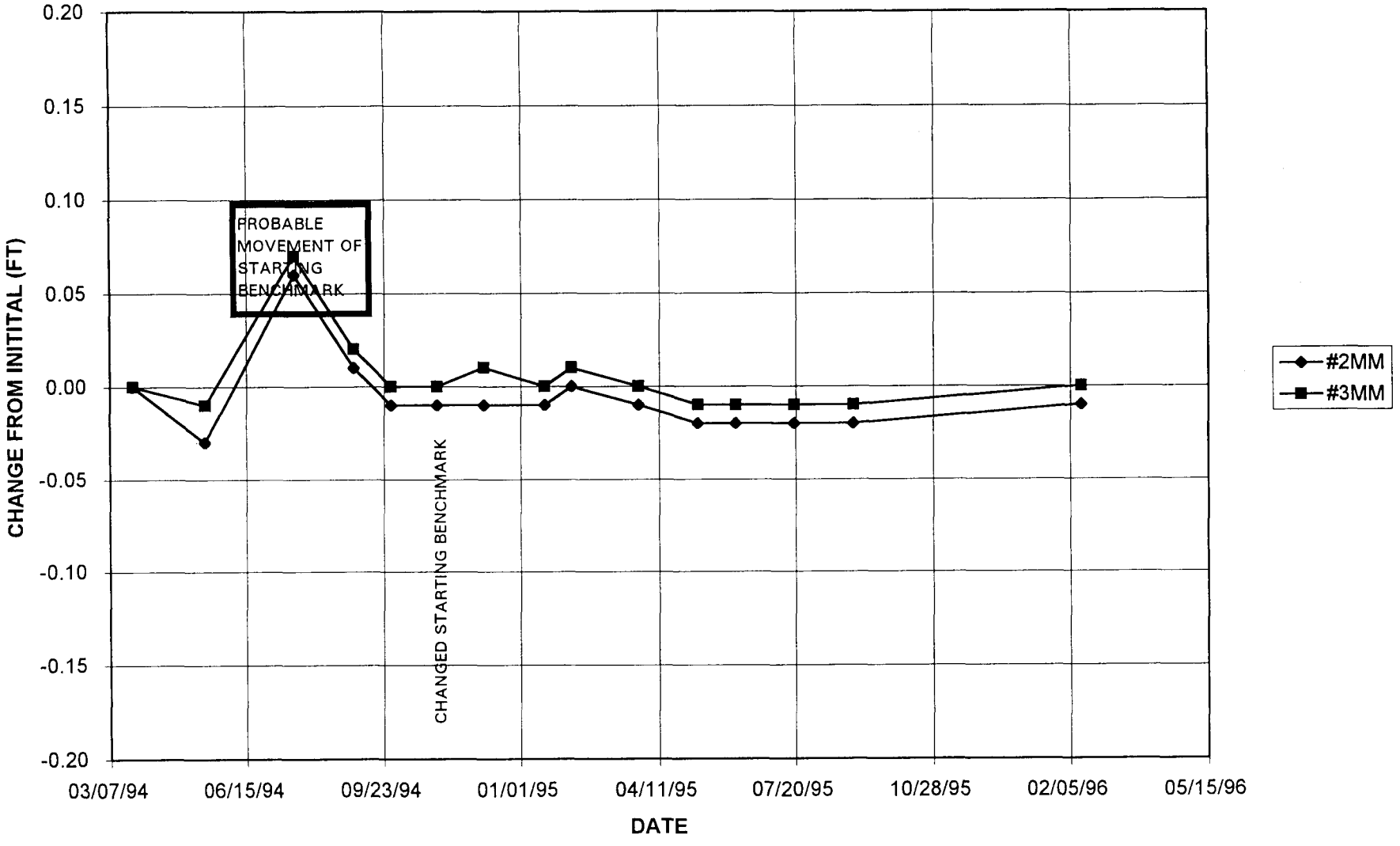
VERTICAL MEASUREMENTS

DATE	FB/PG				ELEV. #3MM	DELTA INIT. #3MM	DELTA PREV. #3MM	ELEV. #4MM	DELTA INIT. #4MM	DELTA PREV. #4MM	ELEV. #5MM	DELTA INIT. #5MM	DELTA PREV. #5MM	ELEV. #6MM	DELTA INIT. #6MM	DELTA PREV. #6MM	ELEV. #7MM	DELTA INIT. #7MM	DELTA PREV. #7MM	COMMENTS
07/27/94	13/4				64.01	0.00	0.00	64.47	0.00	0.00	64.04	0.00	0.00	63.83	0.00	0.00	63.90	0.00	0.00	INITIAL
09/07/94	13/66				64.02	0.01	0.01	64.48	0.01	0.01	64.06	0.02	0.02	63.85	0.02	0.02	63.91	0.01	0.01	
09/29/94	14/27				64.02	0.01	0.00	64.49	0.02	0.01	64.06	0.02	0.00	63.85	0.02	0.00	63.91	0.01	0.00	
11/01/94	14/65				64.02	0.01	0.00	64.48	0.01	-0.01	64.05	0.01	-0.01	63.83	0.00	-0.02	63.90	0.00	-0.01	
12/06/94	15/22				63.98	-0.03	-0.04	64.45	-0.02	-0.03	64.02	-0.02	-0.03	63.80	-0.03	-0.03	63.87	-0.03	-0.03	
01/13/95	15/35				63.99	-0.02	0.01	64.46	-0.01	0.01	64.03	-0.01	0.01	63.81	-0.02	0.01	63.88	-0.02	0.01	
02/15/95	15/69				63.99	-0.02	0.00	64.46	-0.01	0.00	64.03	-0.01	0.00	63.81	-0.02	0.00	63.87	-0.03	-0.01	
03/27/95	16/28				63.99	-0.02	0.00	64.46	-0.01	0.00	64.03	-0.01	0.00	63.81	-0.02	0.00	63.87	-0.03	0.00	
05/10/95	16/50				63.94	-0.07	-0.05	64.41	-0.06	-0.05	63.98	-0.06	-0.05	63.77	-0.06	-0.04	63.82	-0.08	-0.05	
06/13/95	16/70				63.89	-0.12	-0.05	64.35	-0.12	-0.06	63.92	-0.12	-0.06	63.71	-0.12	-0.06	63.77	-0.13	-0.05	APPARENT DOWNWARD MOVEMENT BELIEVED DUE TO MOVEMENT OF STARTING BENCHMARK
07/17/95	17/10				63.94	-0.07	0.05	64.41	-0.06	0.06	63.97	-0.07	0.05	63.76	-0.07	0.05	63.82	-0.08	0.05	
09/07/95	17/44				63.98	-0.03	0.04	64.45	-0.02	0.04	64.02	-0.02	0.05	63.80	-0.03	0.04	63.86	-0.04	0.04	
02/15/96	17/69				64.01	0.00	0.03	64.47	0.00	0.02	64.04	0.00	0.02	63.83	0.00	0.03	63.89	-0.01	0.03	CHANGED STARTING BENCHMARK FROM A4N TO B5MM#4

DAM B-5 MONUMENTS, HORIZONTAL MEASUREMENTS



DAM B-5 MONUMENTS, VERTICAL MEASUREMENTS



DAM B-5 MOVEMENT MONUMENTS

02/22/96 :REPORT DATE

HORIZONTAL MEASUREMENTS + MEASUREMENTS ARE IN THE DOWNSTREAM DIRECTION (E), - MEASUREMENTS ARE IN THE UPSTREAM DIRECTION (W)

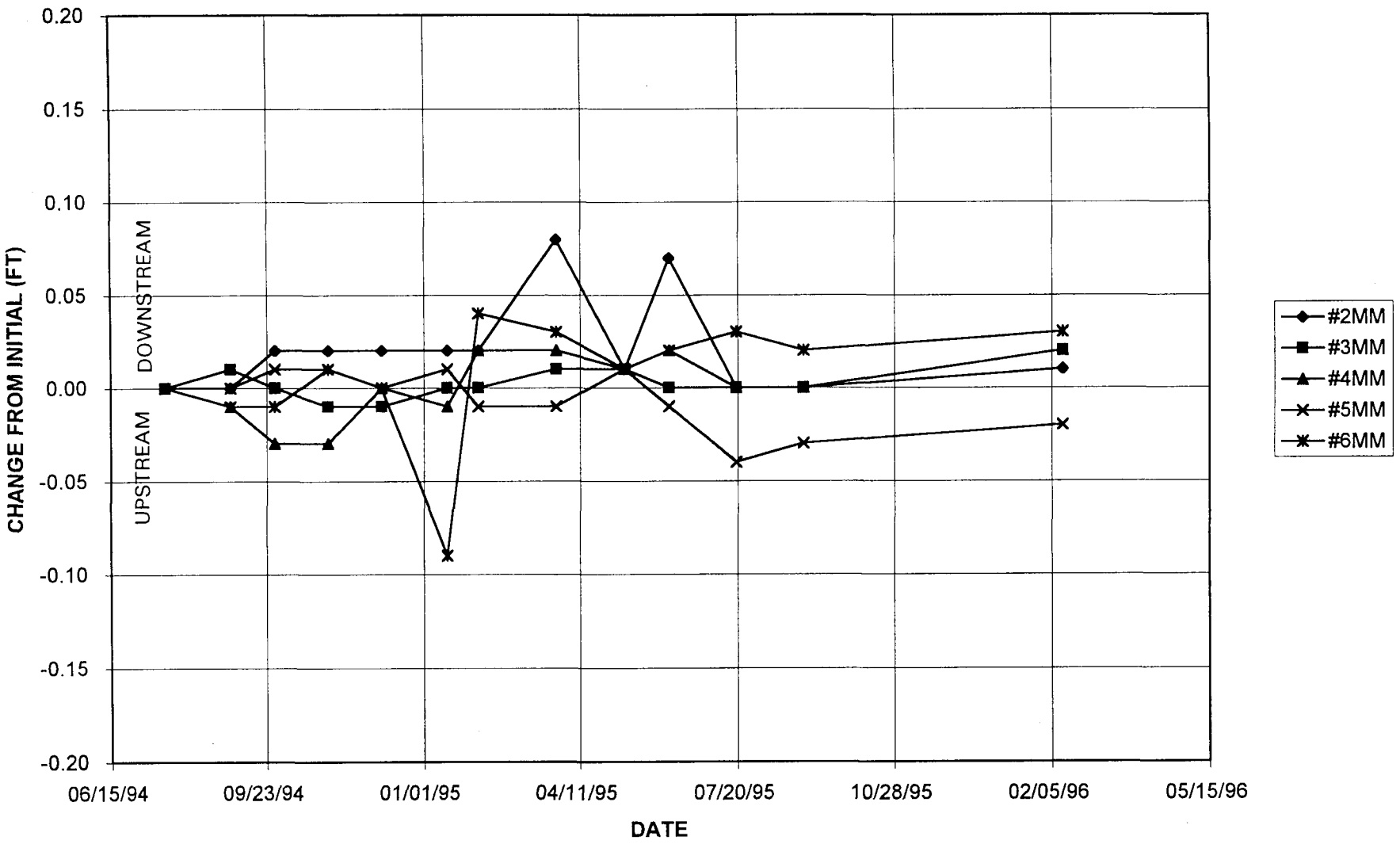
DATE	FB/PG	OFFSET MMS #2MM	DELTA INIT. #2MM	DELTA PREV. #2MM	OFFSET MMN #3MM	DELTA INIT. #3MM	DELTA PREV. #3MM	COMMENTS
03/24/94	11/14	0.02	0.00	0.00	0.02	0.00	0.00	INITIAL
05/16/94	11/64	0.02	0.00	0.00	0.02	0.00	0.00	
07/20/94	12/60	-0.01	-0.03	-0.03	-0.01	-0.03	-0.03	
09/01/94	13/54	0.02	0.00	0.03	0.05	0.03	0.06	PROBABLE MIS-SIGHT DURING SURVEY OF #3MM
09/29/94	14/23	-0.01	-0.03	-0.03	0.01	-0.01	-0.04	
11/01/94	14/63	-0.01	-0.03	0.00	0.01	-0.01	0.00	
12/05/94	15/15	-0.02	-0.04	-0.01	0.01	-0.01	0.00	
01/16/95	15/37	-0.01	-0.03	0.01	-0.02	-0.04	-0.03	
02/07/95	15/65	-0.02	-0.04	-0.01	0.01	-0.01	0.03	
03/27/95	16/24	0.01	-0.01	0.03	0.02	0.00	0.01	
05/09/95	16/47	0.03	0.01	0.02	0.03	0.01	0.01	
06/06/95	16/66	0.02	0.00	-0.01	0.01	-0.01	-0.02	
07/19/95	17/5	0.02	0.00	0.00	0.04	0.02	0.03	
09/05/95	17/41	0.02	0.00	0.00	0.01	-0.01	-0.03	
02/13/96	17/62	0.03	0.01	0.01	0.02	0.00	0.01	

DAM B-5 MOVEMENT MONUMENTS

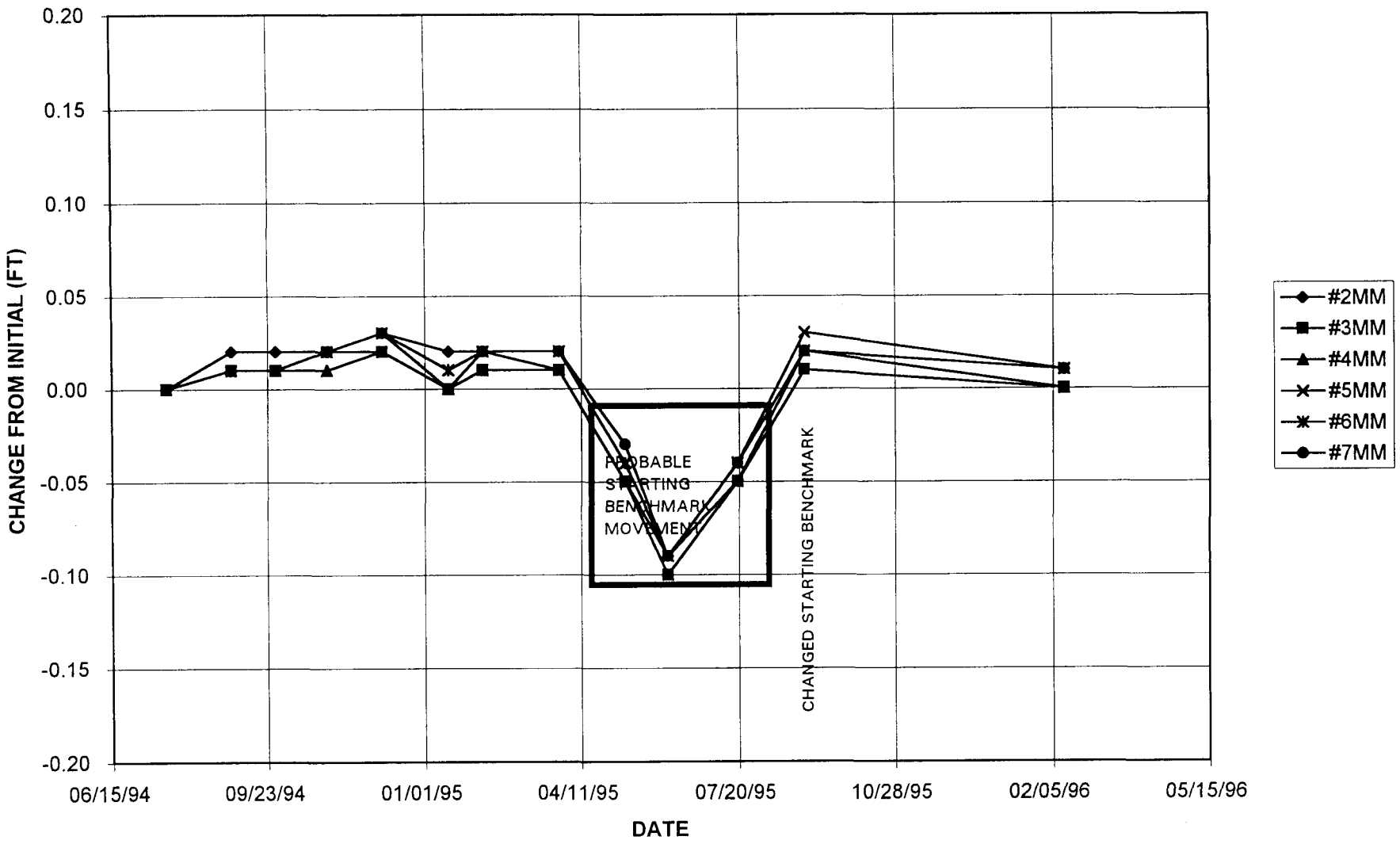
02/22/96 :REPORT DATE

VERTICAL MEASUREMENTS

		ELEV.	DELTA	DELTA	ELEV.	DELTA	DELTA	
		MMS	INIT.	PREV.	MMN	INIT.	PREV.	
DATE	FB/PG	#2MM	#2MM	#2MM	#3MM	#3MM	#3MM	COMMENTS
03/24/94	11/14	10.46	0.00	0.00	10.08	0.00	0.00	INITIAL
05/16/94	11/64	10.43	-0.03	-0.03	10.07	-0.01	-0.01	
07/20/94	12/82	10.52	0.06	0.09	10.15	0.07	0.08	APPARENT UPWARD MOVEMENT BELIEVED DUE TO MOVEMENT OF STARTING BENCHMARK
09/01/94	13/54	10.47	0.01	-0.05	10.10	0.02	-0.05	
09/28/94	14/22	10.45	-0.01	-0.02	10.08	0.00	-0.02	
11/01/94	14/64	10.45	-0.01	0.00	10.08	0.00	0.00	CHANGED STARTING BENCHMARK FROM B5N TO B5MM#4
12/05/94	15/17	10.45	-0.01	0.00	10.09	0.01	0.01	
01/18/95	15/42	10.45	-0.01	0.00	10.08	0.00	-0.01	
02/07/95	15/65	10.46	0.00	0.01	10.09	0.01	0.01	
03/27/95	16/24	10.45	-0.01	-0.01	10.08	0.00	-0.01	
05/09/95	16/49	10.44	-0.02	-0.01	10.07	-0.01	-0.01	
06/06/95	16/66	10.44	-0.02	0.00	10.07	-0.01	0.00	
07/19/95	17/6	10.44	-0.02	0.00	10.07	-0.01	0.00	
08/31/95	17/35	10.44	-0.02	0.00	10.07	-0.01	0.00	
02/13/96	17/63	10.45	-0.01	0.01	10.08	0.00	0.01	


DAM C-2 MONUMENTS, HORIZONTAL MEASUREMENTS
CHANGE FROM INITIAL (FT)
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
DOWNSTREAM
UPSTREAM
06/15/94
09/23/94
01/01/95
04/11/95
07/20/95
10/28/95
02/05/96
05/15/96
DATE
#2MM
#3MM
#4MM
#5MM
#6MM

DAM C-2 MONUMENTS, VERTICAL MEASUREMENTS



DAM C-2 MOVEMENT MONUMENTS

02/22/96 :REPORT DATE

HORIZONTAL MEASUREMENTS + MEASUREMENTS ARE IN THE DOWNSTREAM DIRECTION (E), - MEASUREMENTS ARE IN THE UPSTREAM DIRECTION (W)

DATE	FB/PG	OFFSET #2MM	DELTA INIT. #2MM	DELTA PREV. #2MM	OFFSET #3MM	DELTA INIT. #3MM	DELTA PREV. #3MM	OFFSET #4MM	DELTA INIT. #4MM	DELTA PREV. #4MM	OFFSET #5MM	DELTA INIT. #5MM	DELTA PREV. #5MM	OFFSET #6MM	DELTA INIT. #6MM	DELTA PREV. #6MM	COMMENTS
07/20/94	12/57	1.05	0.00	0.00	0.20	0.00	0.00	-0.37	0.00	0.00	-0.20	0.00	0.00	-0.14	0.00	0.00	INITIAL
08/31/94	13/51	1.05	0.00	0.00	0.21	0.01	0.01	-0.38	-0.01	-0.01	-0.20	0.00	0.00	-0.15	-0.01	-0.01	
09/28/94	14/20	1.07	0.02	0.02	0.20	0.00	-0.01	-0.40	-0.03	-0.02	-0.19	0.01	0.01	-0.15	-0.01	0.00	
11/01/94	14/63	1.07	0.02	0.00	0.19	-0.01	-0.01	-0.40	-0.03	0.00	-0.19	0.01	0.00	-0.13	0.01	0.02	
12/05/94	15/14	1.07	0.02	0.00	0.19	-0.01	0.00	-0.37	0.00	0.03	-0.20	0.00	-0.01	-0.14	0.00	-0.01	
01/16/95	15/36	1.07	0.02	0.00	0.20	0.00	0.01	-0.38	-0.01	-0.01	-0.19	0.01	0.01	-0.23	-0.09	-0.09	PROBABLE MIS-SIGHT DURING SURVEY OF #6MM
02/05/95	15/63	1.07	0.02	0.00	0.20	0.00	0.00	-0.35	0.02	0.03	-0.21	-0.01	-0.02	-0.10	0.04	0.13	
03/27/95	16/23	1.13	0.08	0.06	0.21	0.01	0.01	-0.35	0.02	0.00	-0.21	-0.01	0.00	-0.11	0.03	-0.01	
05/09/95	16/47	1.06	0.01	-0.07	0.21	0.01	0.00	-0.36	0.01	-0.01	-0.19	0.01	0.02	-0.13	0.01	-0.02	
06/06/95	16/65	1.12	0.07	0.06	0.20	0.00	-0.01	-0.35	0.02	0.01	-0.21	-0.01	-0.02	-0.12	0.02	0.01	
07/19/95	17/6	1.05	0.00	-0.07	0.20	0.00	0.00	-0.37	0.00	-0.02	-0.24	-0.04	-0.03	-0.11	0.03	0.01	
08/31/95	17/33	1.05	0.00	0.00	0.20	0.00	0.00	-0.37	0.00	0.00	-0.23	-0.03	0.01	-0.12	0.02	-0.01	
02/12/96	17/60	1.06	0.01	0.01	0.22	0.02	0.02	-0.35	0.02	0.02	-0.22	-0.02	0.01	-0.11	0.03	0.01	

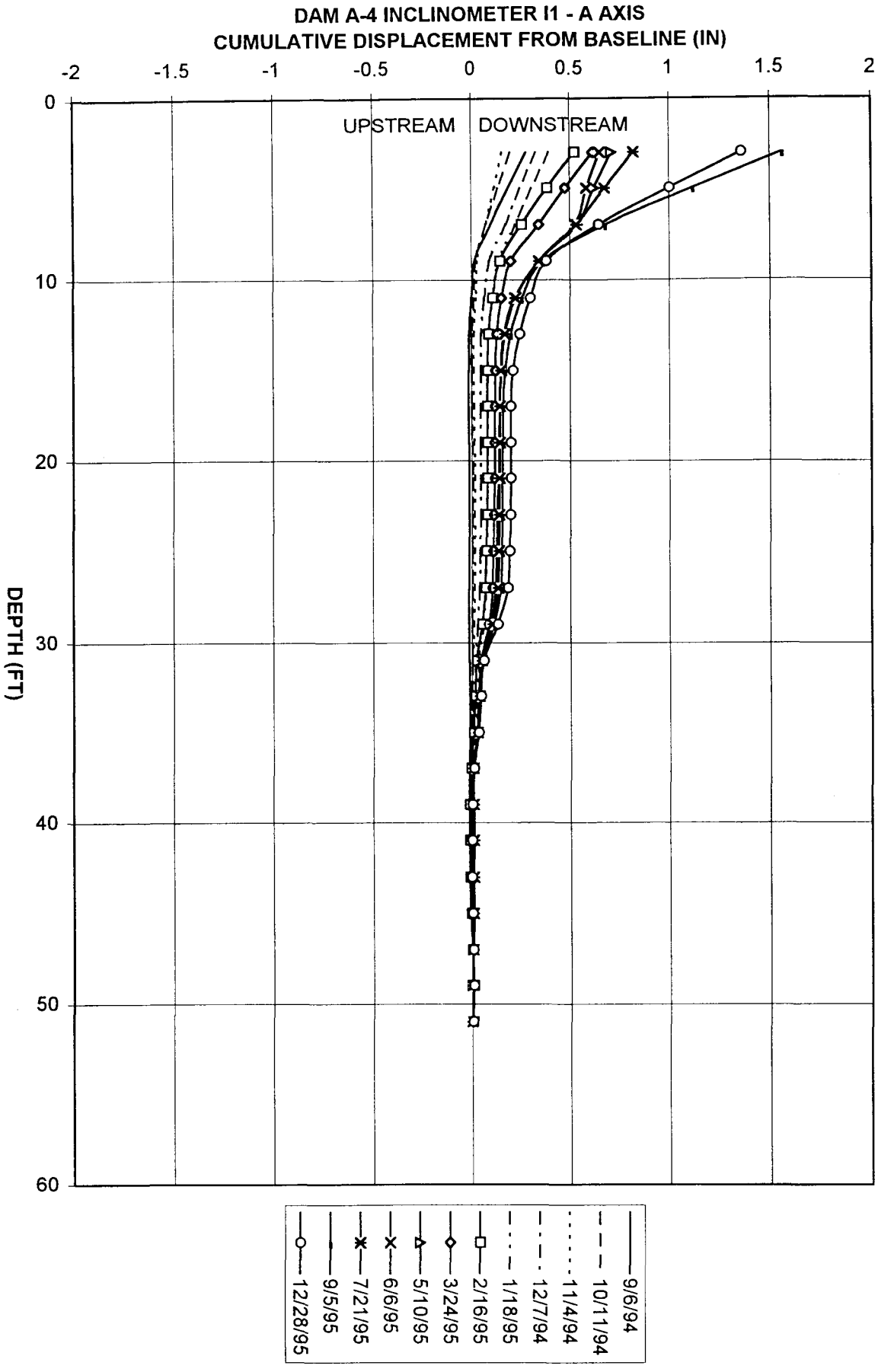
DAM C-2 MOVEMENT MONUMENTS

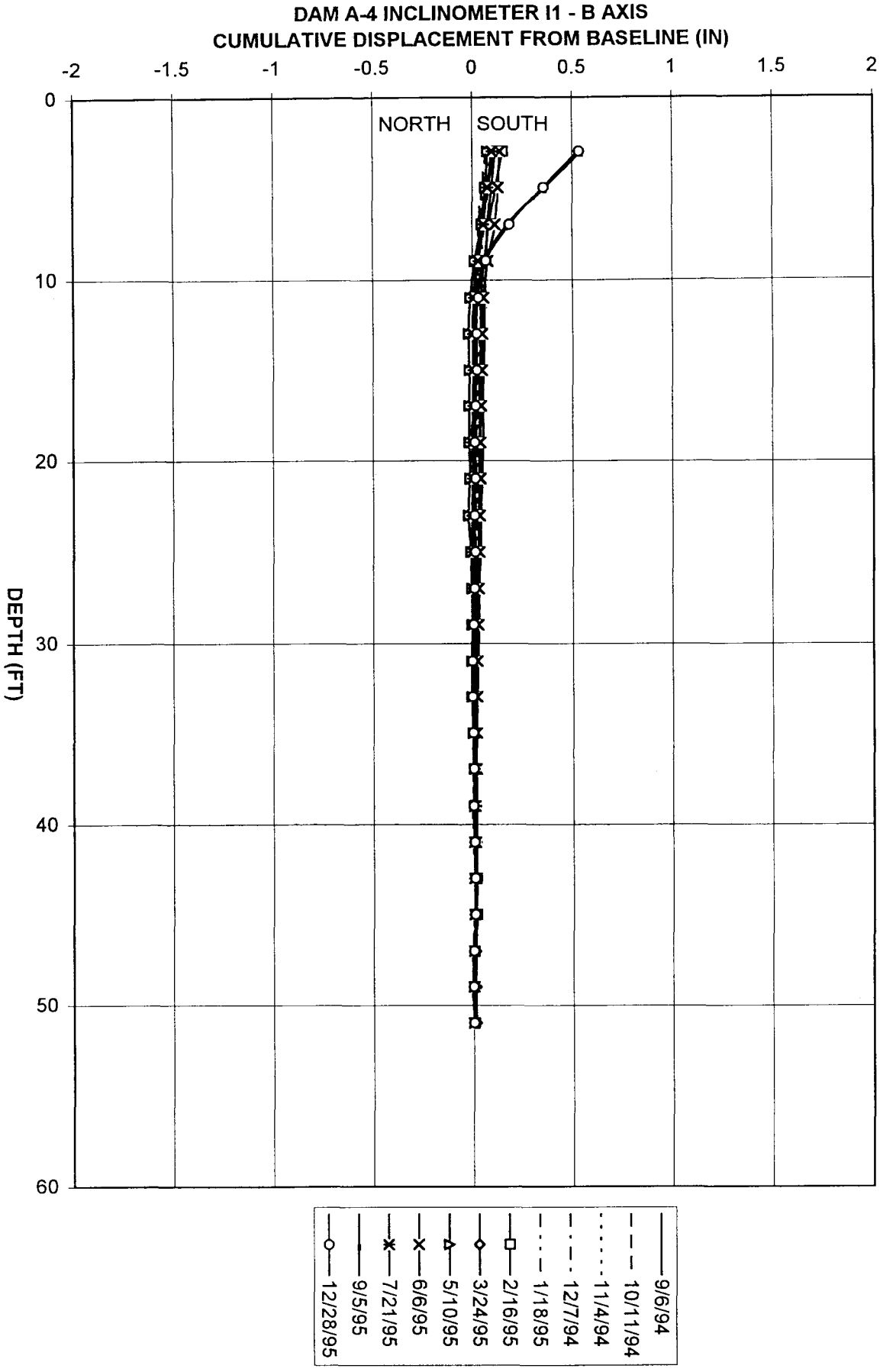
02/22/96 :REPORT DATE

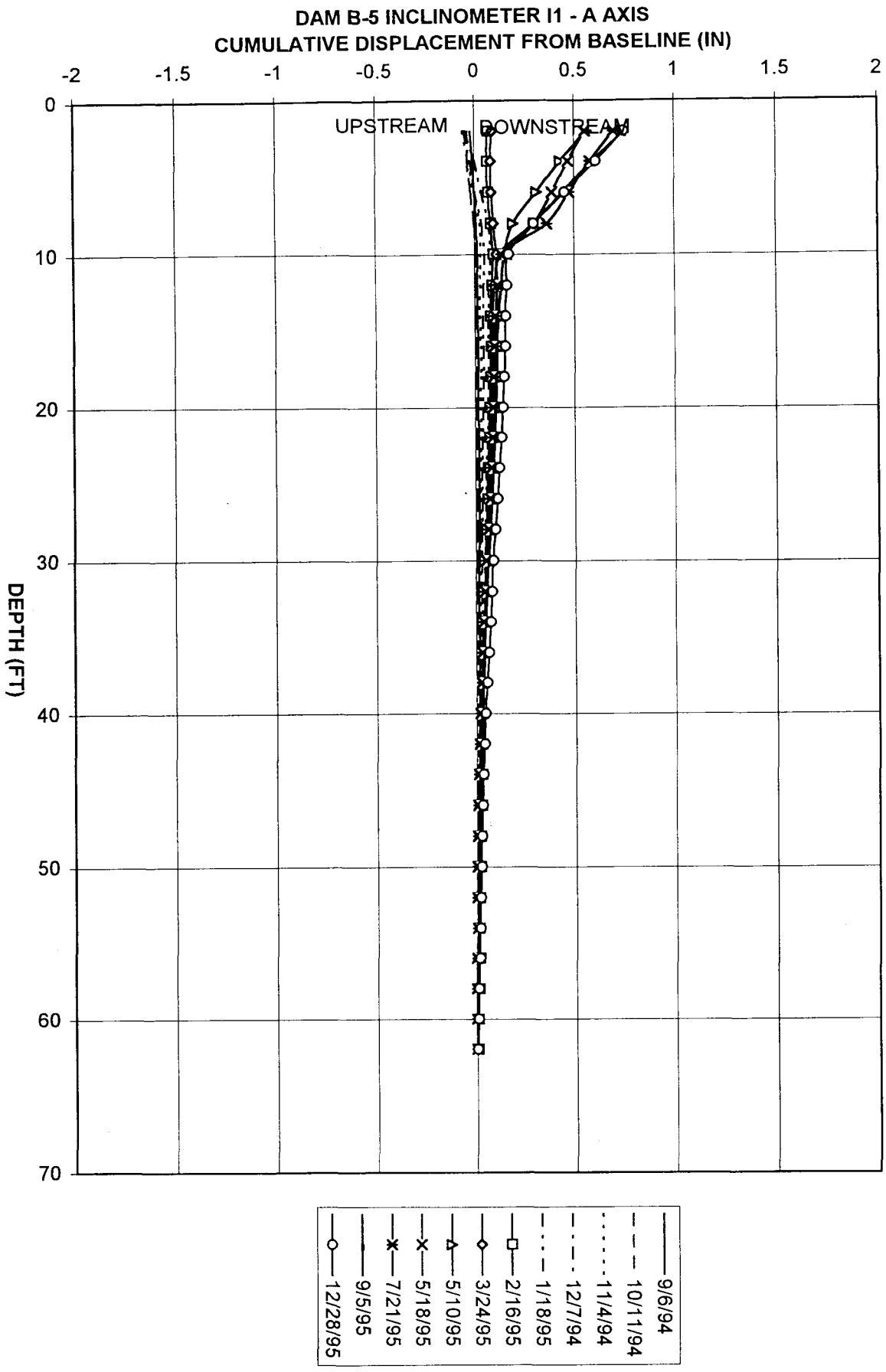
VERTICAL MEASUREMENTS

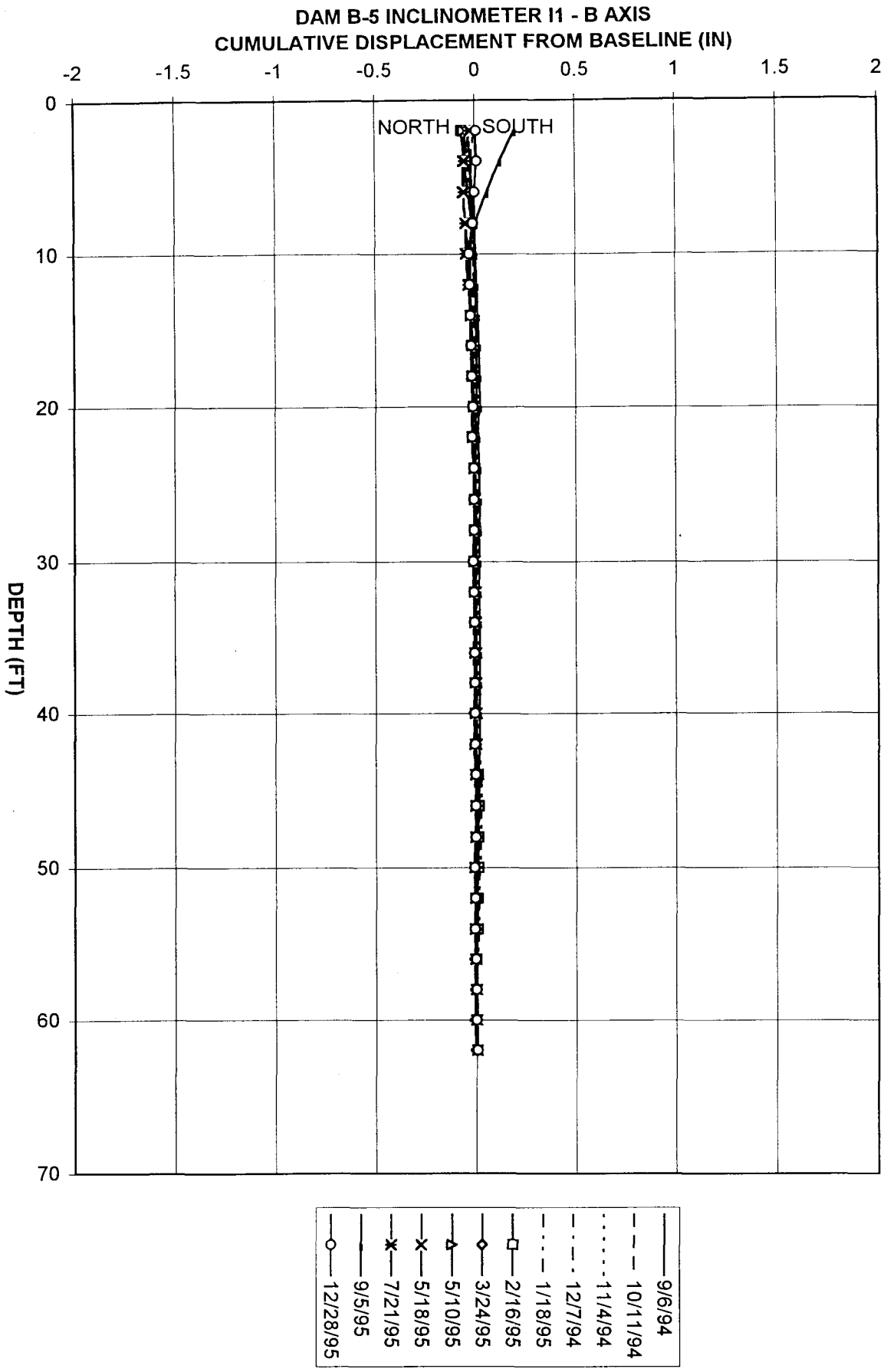
DATE	FB/PG	ELEV. #2MM	DELTA INIT. #2MM	DELTA PREV. #2MM	ELEV. #3MM	DELTA INIT. #3MM	DELTA PREV. #3MM	ELEV. #4MM	DELTA INIT. #4MM	DELTA PREV. #4MM	ELEV. #5MM	DELTA INIT. #5MM	DELTA PREV. #5MM	ELEV. #6MM	DELTA INIT. #6MM	DELTA PREV. #6MM	OFF DAM ELEV. #7MM	DELTA INIT. #7MM	DELTA PREV. #7MM	COMMENTS
07/20/94	12/57	75.45	0.00	0.00	75.58	0.00	0.00	75.94	0.00	0.00	75.65	0.00	0.00	75.99	0.00	0.00	77.31	0.00	0.00	INITIAL
08/31/94	13/52	75.47	0.02	0.02	75.59	0.01	0.01	75.95	0.01	0.01	75.66	0.01	0.01	76.00	0.01	0.01	77.32	0.01	0.01	
09/28/94	14/21	75.47	0.02	0.00	75.59	0.01	0.00	75.95	0.01	0.00	75.66	0.01	0.00	76.00	0.01	0.00	77.32	0.01	0.00	
10/31/94	14/61	75.47	0.02	0.00	75.60	0.02	0.01	75.95	0.01	0.00	75.67	0.02	0.01	76.01	0.02	0.01	77.33	0.02	0.01	
12/05/94	15/16	75.48	0.03	0.01	75.60	0.02	0.00	75.96	0.02	0.01	75.68	0.03	0.01	76.02	0.03	0.01	77.34	0.03	0.01	
01/16/95	15/38	75.47	0.02	-0.01	75.58	0.00	-0.02	75.94	0.00	-0.02	75.66	0.01	-0.02	76.00	0.01	-0.02	77.31	0.00	-0.03	
02/07/95	15/64	75.47	0.02	0.00	75.59	0.01	0.01	75.95	0.01	0.01	75.67	0.02	0.01	76.01	0.02	0.01	77.33	0.02	0.02	
03/28/95	16/29	75.46	0.01	-0.01	75.59	0.01	0.00	75.95	0.01	0.00	75.67	0.02	0.00	76.01	0.02	0.00	77.33	0.02	0.00	
05/09/95	16/48	75.40	-0.05	-0.06	75.53	-0.05	-0.06	75.89	-0.05	-0.06	75.61	-0.04	-0.06	75.95	-0.04	-0.06	77.28	-0.03	-0.05	
06/05/95	16/63	75.36	-0.09	-0.04	75.48	-0.10	-0.05	75.84	-0.10	-0.05	75.56	-0.09	-0.05	75.90	-0.09	-0.05	77.22	-0.09	-0.06	APPARENT DOWNWARD MOVEMENT BELIEVED DUE TO MOVEMENT OF STARTING BENCHMARK
07/19/95	17/11	75.40	-0.05	0.04	75.53	-0.05	0.05	75.89	-0.05	0.05	75.61	-0.04	0.05	75.95	-0.04	0.05	77.27	-0.04	0.05	
08/31/95	17/34	75.47	0.02	0.07	75.59	0.01	0.06	75.96	0.02	0.07	75.68	0.03	0.07	76.01	0.02	0.06	77.33	0.02	0.06	
02/12/96	17/61	75.46	0.01	-0.01	75.58	0.00	-0.01	75.94	0.00	-0.02	75.66	0.01	-0.02	76.00	0.01	-0.01	77.32	0.01	-0.01	CHANGED STARTING BENCHMARK FROM C2S TO MM#1

APPENDIX F - INCLINOMETER MONITORING RESULTS

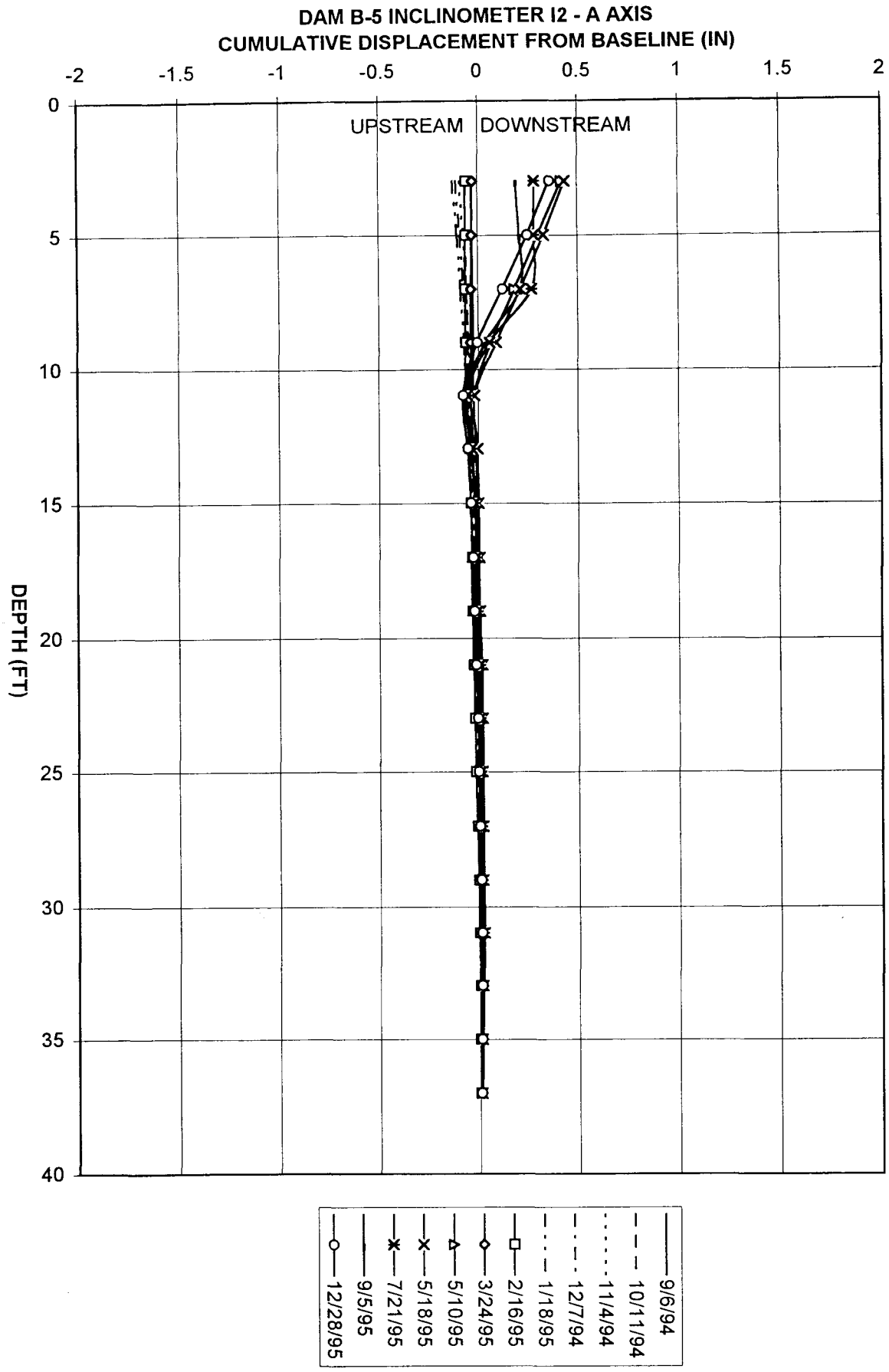

DAM A-4 INCLINOMETER I1 - A AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
UPSTREAM
DOWNSTREAM
DEPTH (FT)
0
10
20
30
40
50
60
9/6/94
10/11/94
11/4/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
6/6/95
7/21/95
9/5/95
12/28/95


DAM A-4 INCLINOMETER I1 - B AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
NORTH
SOUTH
0
10
20
30
40
50
60
DEPTH (FT)
9/6/94
10/11/94
11/4/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
6/6/95
7/21/95
9/5/95
12/28/95

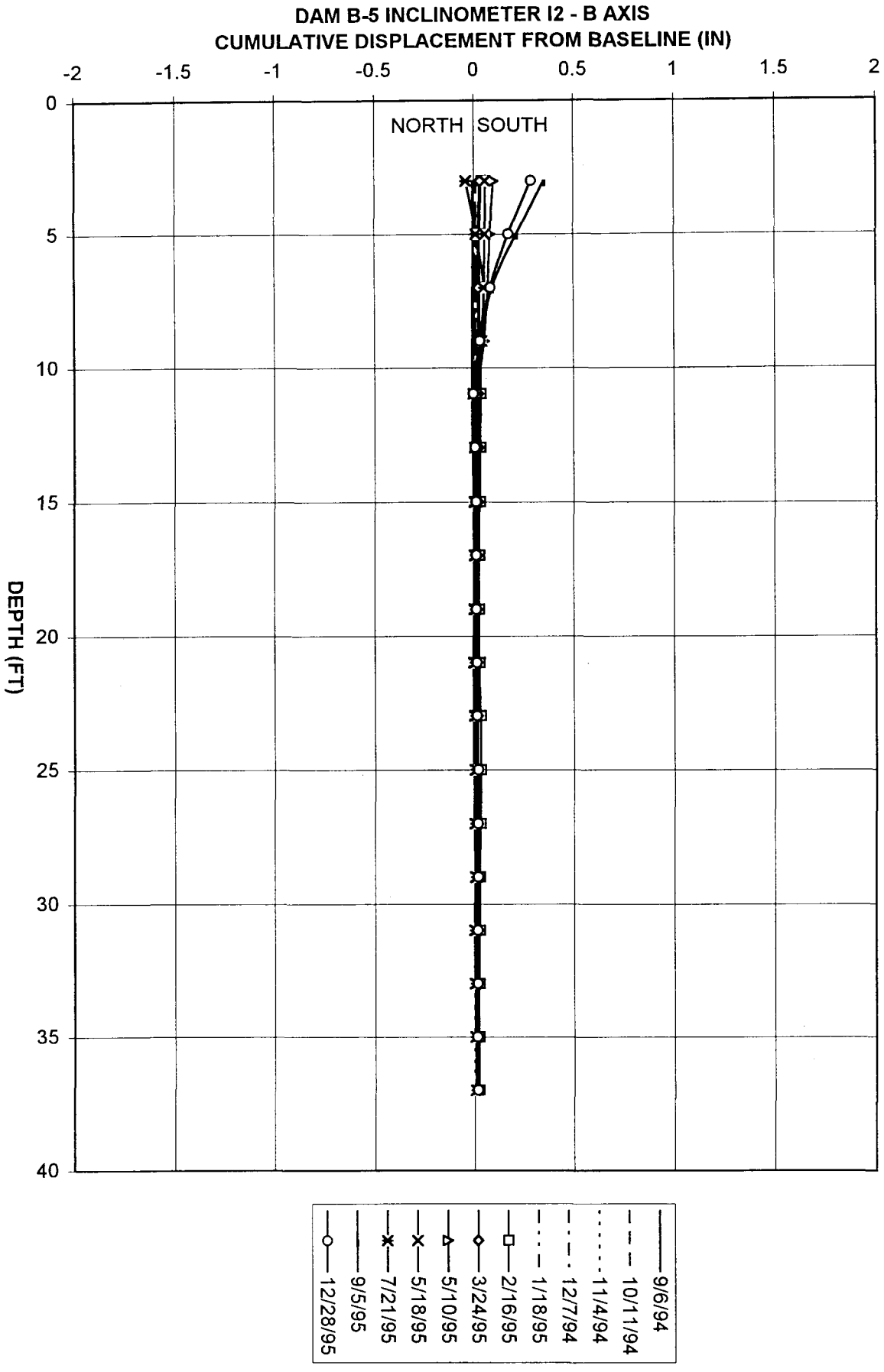

DAM B-5 INCLINOMETER I1 - A AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
UPSTREAM
DOWNSTREAM
DEPTH (FT)
0
10
20
30
40
50
60
70
9/6/94
10/11/94
11/4/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
5/18/95
7/21/95
9/5/95
12/28/95

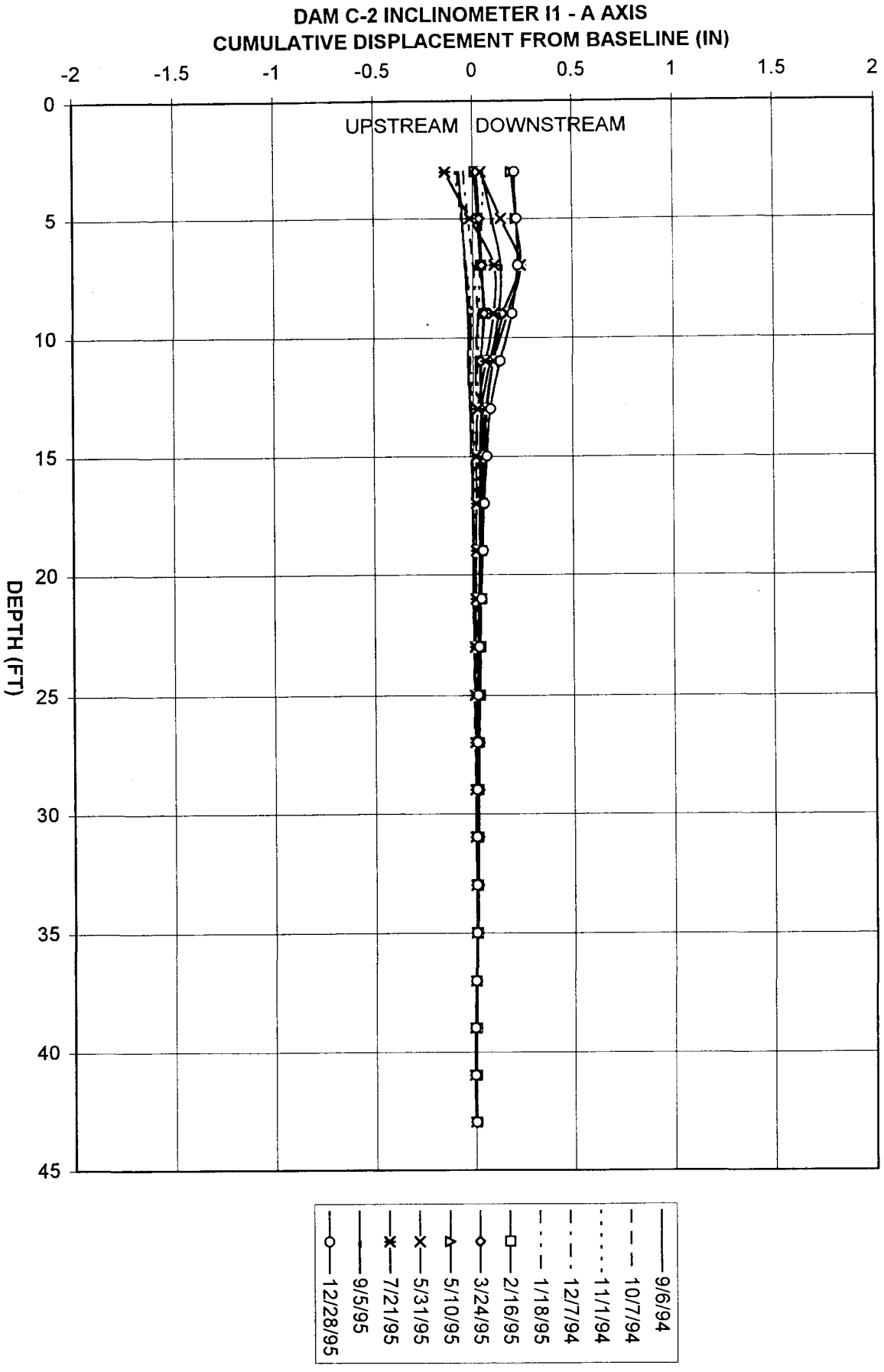

DAM B-5 INCLINOMETER I1 - B AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
NORTH
SOUTH
0
10
20
30
40
50
60
70
DEPTH (FT)
9/6/94
10/11/94
11/4/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
5/18/95
7/21/95
9/5/95
12/28/95

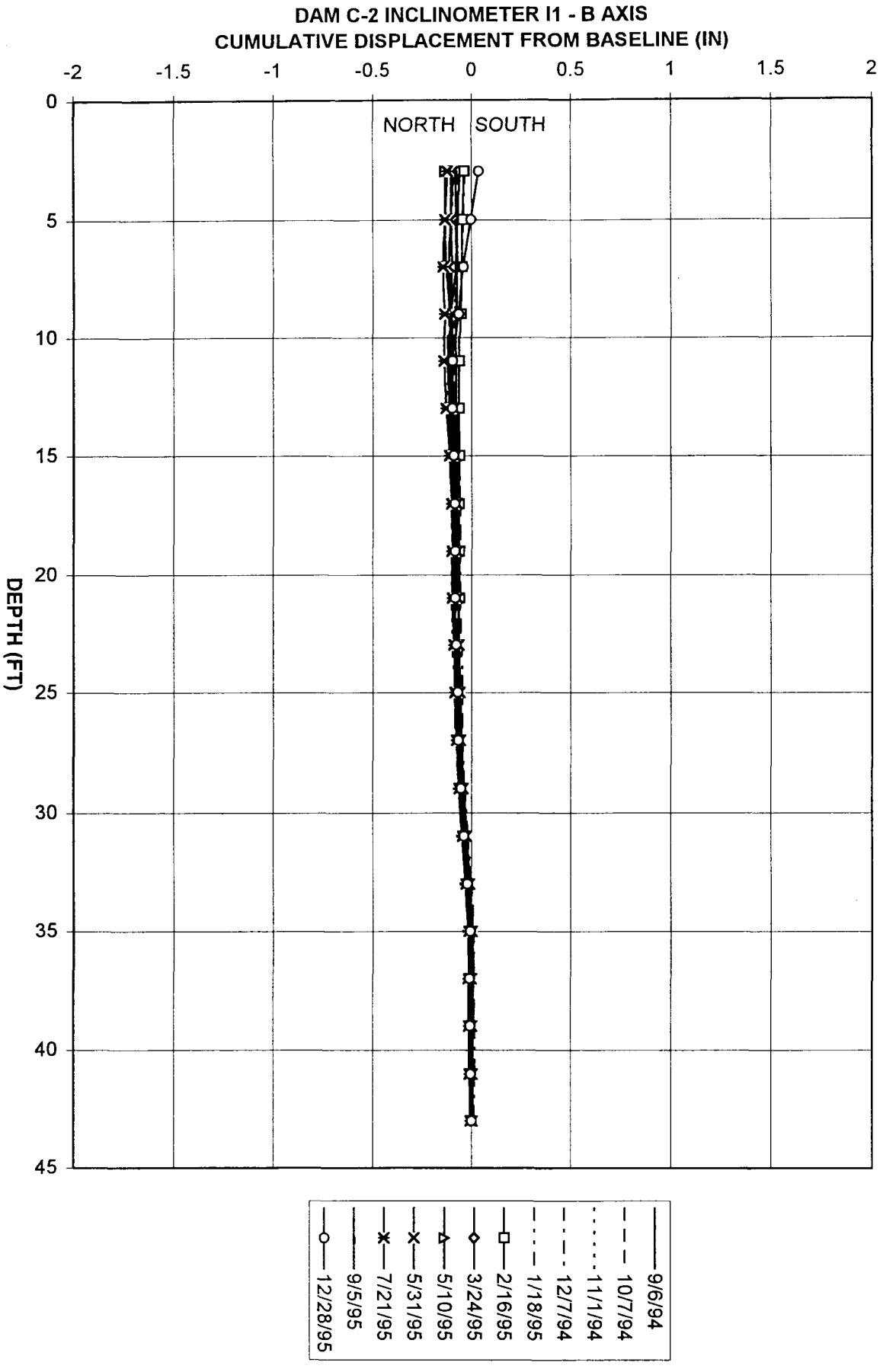
H9
12.5

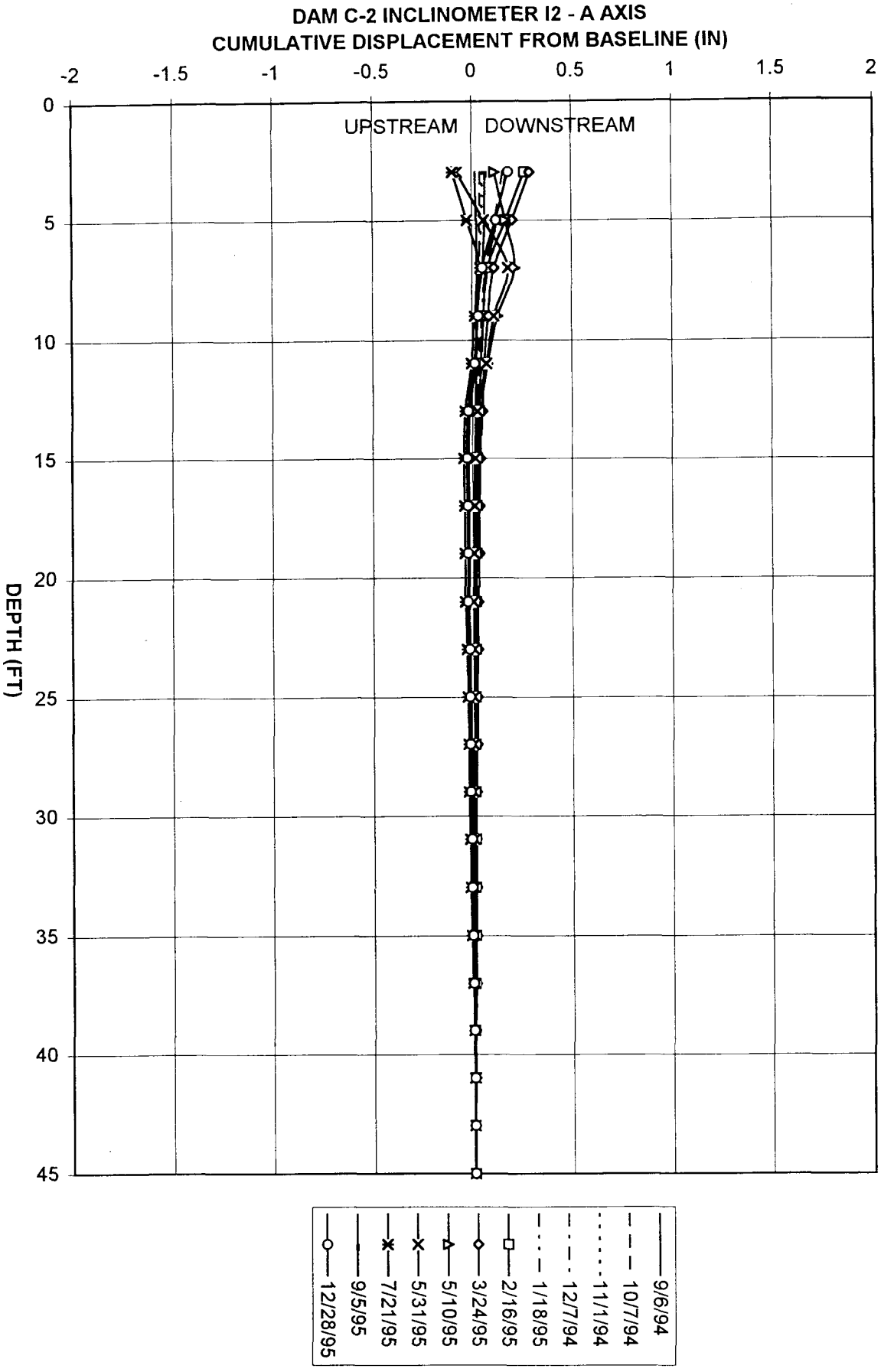

DAM B-5 INCLINOMETER I2 - A AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
UPSTREAM
DOWNSTREAM
DEPTH (FT)
0
5
10
15
20
25
30
35
40
9/6/94
10/11/94
11/4/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
5/18/95
7/21/95
9/5/95
12/28/95

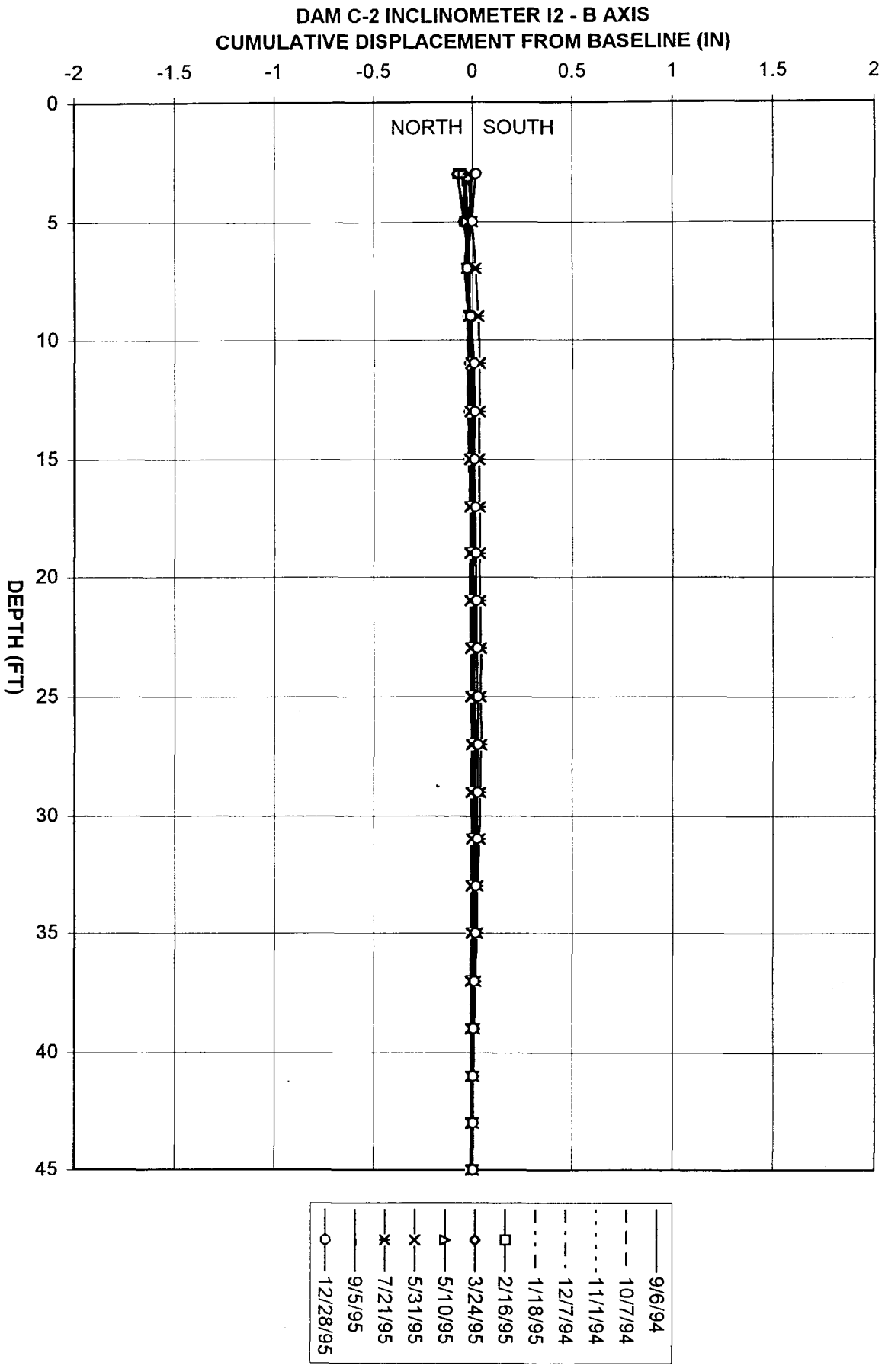
120
126


DAM B-5 INCLINOMETER I2 - B AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
NORTH
SOUTH
DEPTH (FT)
0
5
10
15
20
25
30
35
40
9/6/94
10/11/94
11/4/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
5/18/95
7/21/95
9/5/95
12/28/95


DAM C-2 INCLINOMETER I1 - A AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
UPSTREAM
DOWNSTREAM
DEPTH (FT)
0
5
10
15
20
25
30
35
40
45
9/6/94
10/7/94
11/1/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
5/31/95
7/21/95
9/5/95
12/28/95


DAM C-2 INCLINOMETER I1 - B AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
NORTH
SOUTH
DEPTH (FT)
0
5
10
15
20
25
30
35
40
45
9/6/94
10/7/94
11/1/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
5/31/95
7/21/95
9/5/95
12/28/95


DAM C-2 INCLINOMETER I2 - A AXIS
CUMULATIVE DISPLACEMENT FROM BASELINE (IN)
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
UPSTREAM
DOWNSTREAM
DEPTH (FT)
0
5
10
15
20
25
30
35
40
45
9/6/94
10/7/94
11/1/94
12/7/94
1/18/95
2/16/95
3/24/95
5/10/95
5/31/95
7/21/95
9/5/95
12/28/95



131/131
125/125